



IN THIS ISSUE

- CHAIRPERSON'S MESSAGE

- LATEST NEWS

Eric Beh appointed as extraordinary professor in Statistics

Two academics receive ratings from NRF

Francois Kamper – A local son with global aspirations

Q&A with Associate Professor Justin Harvey

Hassan, Garrett and Trudie included in 2021 First-Year Achievement Awards

- SOCIAL IMPACT

Sugnet, Strawberry and Pets as Therapy

- STUDENT ACHIEVEMENTS

Actuarial Science graduate honoured with coveted Chancellor's Medal

Department congratulates third-year prize winners

Bursary awards and industry partnerships

Department's graduates in 2022: PhD and Masters

PhD recipient blazes trail for women in science

- ALUMNI

Alumnus offers advice and lessons learned from a long and distinguished career

- PUBLICATIONS AND PRESENTATIONS

Published papers and chapters in 2021

Staff presentations at conferences and seminars

- UPCOMING SEMINARS

CHAIRPERSON'S MESSAGE

The Department of Statistics and Actuarial Science is pleased to present a very exciting edition of our newsletter this semester. We are proud of the achievements of our staff, students and alumni, and various articles supporting this appear in this newsletter.

The academic year started a little later than usual; fortunately, with no major surprises. At last, we are returning to full face-to-face lecturing that was not possible whilst lockdown restrictions were in force. Both students and staff made many adjustments and sacrifices and had to adapt a few times to cope with new regulations.

In a previous edition of the newsletter, we discussed the BDatSci Degree. In 2022, the second group of students enrolled for this programme and we are happy to say that we have more than doubled the intake of last year. The programme exceeded our wildest expectations and, judging by this year's Open Day, we expect another good complement of prospective data scientists in 2023.

As a Department, we are very privileged that our industry partners invest in our students by granting bursaries to our postgraduate students. FirstRand, Correlation Risk Partners, and the Faantjie and Lettie Pretorius Trust are generous sponsors of these bursaries. A total of 28 postgraduate students benefitted from these bursaries in 2022.

Since its introduction many years ago, students of the Department of Statistics and Actuarial Science have been awarded the CGW Schumann Medal, the prestigious postgraduate award of the Faculty of Economic and Management Sciences. Students from this Department have been awarded this medal 11 times, the last as recent as 2021. The Stellenbosch University Chancellor's Medal has been awarded to students from this Department four times; the first to Prof Sarel Steel in 1979, the second to Mr Jacques Conradie in 2005, the third to Dr Stephen Reid in 2008 and the fourth, most recently in 2021, to Mr Bradley Moorcroft. Mr Moorcroft received the medal at the graduation ceremony in April 2022.

It is with sadness that we say goodbye to Francois Kamper, who resigned at the end of June. Francois has accepted a research position at The Swiss Federal Institute of Technology Lausanne (EPFL) in Switzerland, and we wish him and Andrea well with another exciting chapter in their lives.

I hope you enjoy this newsletter.

Prof Paul Mostert



Erratum

Please note that in the previous newsletter (December 2021) it was incorrectly stated that the Centre for Multi-dimensional Data Visualisation (MuVISU) will be formally established in July 2022. The Centre was, in fact, established in July 2021. We apologise for the error.

Eric Beh appointed as extraordinary professor in Statistics

Prof Eric Beh has been appointed as extraordinary professor in the Department of Statistics and Actuarial Science, effective from 1 January 2022.



This distinguished scholar's academic career started in 1995 at the University of Wollongong in Australia where he obtained a PhD in 1999 with a thesis entitled "Correspondence Analysis Using Orthogonal Polynomials". He continued his career at the University of Western Sydney and from 2009 at the University of Newcastle, Australia, where he was a full professor from 2016 until his retirement at the end of 2021. Prof Beh spent 2017 in Italy as Visiting Professor in Categorical Data Analysis at the University of Campania School of Economics. He currently holds the position of Honorary Professorial Fellow at the National Institute for Applied Statistics Research Australia at the University of Wollongong. He is an elected member of the International Statistics Institute and a member of the International Association of Statistical Computing.

As an international expert in the visualisation of categorical data, his work is closely related to that of MuViSU (Centre of Multi-dimensional Data Visualisation). MuViSU itself was established in 2021 to formalise the activities of an informal network of national and international researchers in the field of high-dimensional visualisation, but Prof Beh has been part of this group since 2003.

His research focuses on the theory and analysis of categorical data, and specifically on ordinal categorical data. His main research interests are correspondence analysis and inference, together with chi-square partitions in contingency tables with applications in ecology. He is the co-author of three books on correspondence analysis and the

co-editor of two conference proceedings. Prof Beh has published 119 papers in refereed journals and publications. His paper "Simple correspondence analysis: a bibliographic review" which was published in 2004 in *International Statistical Review*, was included in a collection of 61 key papers in categorical data analysis over the past 120 years (<https://uk.sagepub.com/en-gb/eur/categorical-data-analysis/book240111>), placing Prof Beh in the company of authors such as Fisher, Pearson, Goodman, Agresti, Haberman and others.

Since retiring, Prof Beh has had more time to focus on research and editorial projects. He and his close collaborator, Prof Rosaria Lombardo from the University of Campania in Italy, have published extensively on examining the role of orthogonal polynomials in correspondence analysis. This ongoing project examines the impact of orthogonal polynomials on the structure of the association between two or more categorical variables and links with theory in the realm of three-way and multi-way data analysis.

In addition, Prof Beh is co-editor of a Springer volume titled "Analysis of Categorical Data: Historical Perspectives: A Festschrift in Honor of the 88th Birthday of Shizuhiko Nishisato" and the leader of the editorial team compiling an encyclopaedic type of reference or book series on correspondence analysis and related visualisation techniques.

We are very honoured to have such a distinguished scholar in our midst.

Two academics receive ratings from NRF

The results from the latest round of applications for National Research Foundation (NRF) ratings were released at the end of 2021 and the Department of Statistics and Actuarial Science congratulates two of our researchers who were successful in this round.



Prof Niël Le Roux, an emeritus professor at the Department and no stranger to successful NRF ratings, was awarded a B1 rating, which is effective from 01 January 2022 until 31 December 2027. He is thus regarded by

the rating panel as an internationally acclaimed researcher. Panel members furthermore agree that he has earned considerable international recognition for the high quality and impact of his recent research outputs, with some of them indicating that he is a leading international scholar in the field. This is the highest rating that Prof Le Roux has been awarded, having previously held the following ratings:

B2: 01/01/2016 - 31/12/2021

C1: 01/01/2010 - 31/12/2015

C2: 01/01/2004 - 31/12/2009

His current research focuses on biplots, on which he is a highly regarded expert, both nationally and internationally. In addition, he is also involved in simulating aggregation bias in the study of neural reliability experiments.

His vast experience has seen him mentor, both formally and informally, many of the aspiring researchers in the Department in a variety of ways. We asked him what he believes the main value of an NRF rating to be, particularly with the substantial reduction of grant funds received from the NRF in the past 10 years. His view is that, in the

past, the NRF incentive funding-scheme for rated researchers proved to be a significant lure to apply for a rating. In recent years this lure has been largely diminished, although the NRF still provides several avenues for financial assistance to rated individuals. Furthermore, a rating has become a prerequisite when applying for certain jobs or promotions. Perhaps the most important aspect of a rating is that it provides you with an objective measure of your status as a researcher on national and international levels.



The second researcher, **Dr David Hofmeyr**, was awarded a Y1 rating for the same period. This rating refers to a young researcher (within five years of receiving their PhD and under 40 years of age) who is recognised by all

reviewers as having the potential – demonstrated by research products – to establish themselves as a researcher and with some reviewers indicating that the researcher has the potential to become a future leader in their field. Dr Hofmeyr's current research interests include: cluster analysis, dimensionality reduction, optimisation, computational statistics, non-parametric smoothing and function estimation, measures of model complexity and methods for model selection in non-standard problems. He also feels that the NRF rating is an accolade, as well as an (external) measure by which academics can be compared.

Francois Kamper – A local son with global aspirations

It is wishful thinking to hope that every newsletter will contain only “happy” articles. Unfortunately, outside of fairy tales, that hardly ever happens, and this edition is no exception. At the end of July 2022, the Department bid a bittersweet farewell to one of its beloved sons, Francois Kamper. Francois has been a much-valued member of the academic team for many years, yet his influence and legacy extend even further back in time.



Francois was born in Pretoria, but his family moved to Stellenbosch before his first birthday, when his father, previously employed as an engineer for SpoorNet, joined the Department of Electrical and Electronic

Engineering at Stellenbosch University. Francois has established deep roots in Stellenbosch, having attended Eikestad Primary School and later Paul Roos Gymnasium for secondary schooling. Having always had an affinity for mathematics, he commenced studies in Actuarial Science at the Department in Stellenbosch. Although he performed well, by the end of his undergraduate studies it had become clear that his interests lay more in mathematical statistics, programming and machine learning, which he pursued for his postgraduate studies.

Francois comes from an academic family. His mother works at the Central Analytical Facilities, his father and older brother are both professors in the Department of Electrical and Electronic Engineering, his younger sister is pursuing a PhD in Mechatronic Engineering in Leuven and his youngest sister is studying towards an honours degree in Ancient Cultures. It is no surprise that Francois flourished during his postgraduate

studies. When presented with opportunities to study for his PhD, he was able to obtain funding to study probabilistic graphical models. He was jointly supervised by Prof Johan du Preez from the Department of Electrical and Electronic Engineering (through whom partial funding was obtained, in addition to an NRF bursary coordinated by Prof Paul Mostert) and Prof Sarel Steel from the Department of Statistics and Actuarial Science. Whilst studying for his PhD, Francois spent six months abroad in Trento, Italy (no doubt developing a passion for overseas travel, gelato and pizza), and managed to spend some time in Switzerland, where his wife, Andrea, holds citizenship.

While still working on his PhD, he was offered a position as a lecturer in the Department of Statistics at SU and he has been here ever since. After earning his PhD, he took over the masters-level course in Statistical Learning Theory from his mentor, Prof Steel, and has been successfully teaching this flagship subject ever since. He also lectured in second-year Applied Statistics and a module in third-year Mathematical Statistics, among others. In 2021, he was promoted to senior lecturer.

Outside of work and study, Francois has many hobbies, including gardening and one of his greatest passions: football. His undying loyalty to his beloved Liverpool United is proof that he can be committed to a cause during both the good times and the not-so-good times! Apart from watching sport he dabbles a bit in social leagues on campus, which fuels his love of meeting

new people. The high point of this came in 2014 when he met his wife, Andrea, on Heritage Day (affectionately known as "Braai Day" – a testament to Francois' love of socialising and the outdoors). They became engaged in 2014, married in 2015 and remain deeply in love to this day. According to Francois, she taught him to cook and awakened a love of the culinary arts in him. They currently have two cats (a Birman and a breed of forest cat), which sadly will have to remain behind temporarily in Stellenbosch.

Francois describes the ability to take a problem and continually tinker around with it until you arrive at a solution as one of the most rewarding aspects of academia. He enjoys learning and applying his mind to a new problem and having the academic freedom, in terms of time and capacity, to pursue it. He is particularly proud of his achievement in taking over the Statistical Learning Theory course. Looking back, he regrets not having done more computer science and programming at undergraduate level as this would have enabled him to pursue his passions on an even greater scale.

He hopes that he will be remembered by colleagues and others he has met as the quintessential "nice guy", an easy-going person who is able to get on well with everyone. Francois' advice for a young lecturer seeking to fill his sizable shoes is to not neglect research.

"It is the essence of who you are as an academic and should not be neglected; those passions should not be put on the back-burner," he says.

Francois understands that the Department of Statistics and Actuarial Science puts a high premium on excellence in lecturing, and while this is a worthy ideal, it should not be to the detriment of personal development. He believes that being a better researcher will make you an even better lecturer.

He will start a new position in Switzerland at the École Polytechnique Fédérale de Lausanne (EPFL) – The Swiss Federal Institute of Technology Lausanne – in August 2022. The EPFL specialises predominantly in natural sciences and engineering and according to the QS World University Rankings it was ranked 14th in the world across

all fields in 2020/2021. The EPFL, in collaboration with a neighbouring institution (ETH Zurich), has established a Swiss Data Science Centre. Following a gruelling interview process and his subsequent successful appointment, Francois will be employed as a data scientist/researcher and will work on projects submitted to the Centre by both academia and industry partners. His focus will be on implementing machine learning models for these projects, something about which he is intensely passionate. In his personal capacity, he aims to continue the research started in his PhD, namely, inferring causal discovery within probabilistic graphical models.

The geographical location of the EPFL will allow Francois to fulfil another lifelong ambition, which is to live abroad. After a lifetime spent in and

around Stellenbosch, he will be able to experience another culture, travel and explore the world. When asked what he will miss most about being in South Africa, his response was: "The people!" He appreciates the friendliness and warmth that characterise the community, both at the University, as well as in the broader Stellenbosch area and South Africa in general. His close family ties to this area mean that he will probably still be seen around campus on occasion when visiting, but he anticipates missing family most during the cold

European winters.

The Department of Statistics and Actuarial Science will miss Francois and is grateful for his contributions, both as a student and as an academic colleague. His easy manner and upbeat outlook in the face of difficult challenges has made him a stalwart of the Department and someone to rely on. We wish him well with his future endeavours and trust that he will be successful in reaching the heights to which he has always aspired. With his optimism, work ethic and ability to endear himself to his colleagues, we strongly feel that he will be the best global ambassador for our university and an example of the possibilities available. Whilst we know that this will not be the last we will hear from him, the loss of his daily cheerful greeting, accompanied by a warm smile beaming out from below his unruly fringe will leave a gap in our hearts and minds.

**"Being a
better
researcher
will make you
and even
better
lecturer..."**

Q & A

with Associate Professor Justin Harvey

The Department of Statistics and Actuarial Science congratulates Justin Harvey on being promoted to Associate Professor (AP). This promotion is a well-deserved reward for many years of hard work contributing to the Stellenbosch University community as well as his teaching and research contributions in the field of Statistics. Justin is an academic in the discipline of Mathematical Statistics and prior to joining the Department of Statistics and Actuarial Science, he worked as a consultant at the Centre for Statistical Consultation. The entire Department is excited about his promotion, and we took time to catch up on his academic journey to date.

Tell us about yourself and your family

JH: I am a simple small-town boy from Kimberley in the Northern Cape who grew up in the shadow of mine dumps. I completed an undergraduate degree in Actuarial Science, followed by postgraduate studies in Mathematical Statistics at the University of the Free State. After working in industry for a few years I joined Stellenbosch University in 2009, initially as a statistical consultant before joining the lecturing team. I am married to a wonderful woman, Talitha, a daughter of the Swartland, who is a medical officer in anaesthetics at the government hospital in Paarl. We have 10-year-old (most likely 11 years old at the time of publication – they would want me to add this technicality) twin daughters named Caitlin Rachel and Beth Rachel. Most of my extended family still lives in either the Northern Cape or the Free State. In my spare time I enjoy outdoor activities (I used to do a lot of mountain biking) and hunting with my father and brother-in-law. I am also a worship leader at my church in Paarl,



where I play piano (amateur at best), guitar, bass guitar, flute, and drums. Recently I have taken up knife-making as a hobby.

What has been the most rewarding aspect of your academic career so far?

JH: I enjoy interacting with people. In fact, my favourite time of day is walking into the office and having a quick chat with as many people as will tolerate me each morning. I am definitely a 'people-person' and this possibility for collaboration, either in articles or in discussions, must be one of the most rewarding aspects for me and my academic career. First, at the consultation unit it was incredibly rewarding to meet and interact with new researchers from varied fields each day. It is still one of the experiences I enjoyed most, and I symbiotically learned about so many different topics during this time. As an academic, the most rewarding moment is the end of the semester, when you have formed a relationship with students (who were initially awkward and – dare I say – suspicious of you) and you can see the fruits of the past six months of invested time and energy. I have a severe case of wanderlust, and so getting to travel to new destinations and collaborate with people of various backgrounds is intensely rewarding.

What was the most challenging aspect during your AP promotion?

JH: That's an easy one: the paperwork. I am neither a huge fan of admin, nor am I a gifted practitioner thereof by any definition. The application process was similar to NRF applications in that there were many reports and motivations that needed to be written. Another aspect (common to both NRF and AP applications) is that you need to "market" or "sell" yourself and essentially highlight the

contributions you made to both the Department and academia. Ask any student of mine and they will confirm that my stock attempts at humour involved a fair amount of self-deprecation and downplaying. Thus, motivating or "selling" myself in the process was quite challenging.

What are your key roles as an AP?

JH: I am still new to this whole "AP" thing, and therefore I am only now starting to get my feet wet. However, as far as I visualise my role, I hope that the emphasis is on supervision, personal research goals, mentorship of new lecturers and supporting the leadership of the Department in a more meaningful way. Ultimately, it would also be fulfilling for me to play some strategic role in the future of the Department, for example, in assisting more with the roll-out of new modules/ programmes such as the BDatSci behemoth the Department has undertaken.

What has been your best contribution to the Department and academic literature?

JH: As a self-assessment I would hope that my primary contributions are more on an inter-personal level: making students and staff feel welcomed and creating an environment that is conducive to the challenge ahead of us. In terms of the latter, the challenge – as I see it – is to produce top-quality, employable, and critically thinking students for the marketplace; no mean feat for a Department with such a large teaching burden. By nature, I always have a new "project" to implement, and I think that one of my best

contributions to lecturing has been the emphasis that I place on thinking about and redesigning the way in which my courses are offered, whether using teaching and learning tools or curriculum development from the roots up. In terms of my contribution to academic literature, I have to say a huge thanks to Martin Kidd at the Centre for Statistical Consultation. Whilst I did not publish many core statistical papers during this time the collaborations and consultations led to many publications, some of which had some substantial impacts on the domain. This has been a rewarding and humbling experience.

What is your advice to young academics/ researchers?

JH: That's a tough one and I don't think I have the necessary experience to be dispensing sage-like advice. However, if pressed for an answer I suppose I would say what I wish someone had told me: don't be afraid to make mistakes. Fear of mistakes is paralysing and not helpful in research and tertiary study, where the aim is to leave the "safe" regions behind and enter uncharted territory. You will most likely make fewer mistakes than you think, but too often we never venture out for fear of failure. Further advice would be to cultivate relationships with collaborators while you are young: few people ever do something significant in isolation. Do not be too proud to ask for help and be ready to reciprocate wherever and whenever you can.

Hassan, Garrett and Trudie included in 2021 First-Year Achievement Awards

Every year the University rewards the performance of first-year students through the First-Year Achievement Awards. These students, in turn, nominate the lecturer who they feel contributed most to their achievements.

It is with great pride that we acknowledge the work done by our nominated lecturers for the 2021 academic year:

- Hassan Sadiq, nominated by Hans Hey for Statistics and Data Science 188
- Garrett Slattery, nominated by Suzanna Fourie for Introduction to Actuarial Science
- Trudie Sandrock for Probability Theory and Statistics 144

The students and lecturers attended an awards event on 18 May 2022, hosted by the Deputy Vice-Chancellor: Learning and Teaching, Prof Deresh Ramjugernath. Excerpts of letters of congratulations by lecturers, and acknowledgement by students, were displayed during the event.

This is Garrett's second consecutive year of being recognised in this way. Well done to Hassan, Garrett and Trudie.

Sugnet, Strawberry and Pets as Therapy



Pets as Therapy (PAT) is a community-based, voluntary outreach organisation that coordinates animal-assisted activities in a range of settings. PAT organises for animal guardians and their animal companions (mainly dogs and a few cats) to visit people in hospices, retirement homes,

frail care facilities, special needs schools, residential centres, and a variety of other venues. PAT visits bring company, support, comfort, pleasure, stress relief, and stimulation to those living either permanently or temporarily in these and other establishments.

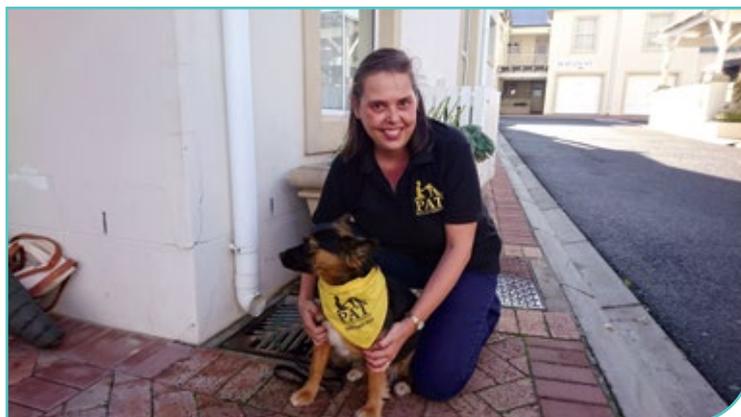
Prof Sugnet Lubbe, lecturer in Statistics, and her companion Strawberry are PAT volunteers who visit the frail care centre of a Somerset West retirement village on a weekly basis. The residents cannot wait for Strawberry's arrival every Wednesday morning and Strawberry enjoys the attention and pampering she receives during her visits.

There is no need for specialised training for either

the animal guardian (human) or animal companion (dog). After a simple application process, the guardian and their companion are invited to an assessment session where an animal-human interaction specialist assesses the suitability of both the guardian and companion. Some animal companions may be more suited to visit children while others are more suited to an environment with older people. PAT also requires the guardian to accompany one of their experienced volunteers on at least two mentoring visits before starting with their own therapy visits.

During visits, the interaction between the human and animal companion is social and unstructured. Depending on the individual's preferences, Strawberry will lie on a resident's lap, lie at their feet while they talk about their own animal experiences or sit with someone for a thorough brush of her longish hair. Each animal companion and the individuals we visit are different. Guardians need to be flexible and able to adapt to different situations.

PAT also offers Stellenbosch University students the opportunity to engage with one or two animal companions during weekly sessions through the Student Affairs' Centre for Student Counselling and Development: Thursdays 16:30 – 17:30 at Den Bosch, 39 Victoria Street. Enquiries can be directed to Marieanne le Roux (mclr@sun.ac.za) or Marlene Denyssen (mdenyssen@sun.ac.za / 021 808 4707).



Actuarial Science graduate honoured with coveted Chancellor's Medal



Author:
Corporate
Communications
and Marketing.
Photograph:
Stefan Els

Bradley Moorcroft, an Actuarial Science graduate, is the recipient of Stellenbosch

University's (SU) coveted Chancellor's Medal for 2021. The medal is awarded annually to a final-year or postgraduate student who has excelled academically, has contributed to campus life in various ways, and has worked hard at developing co-curricular attributes.

Moorcroft was awarded the degree BCom Hons in Actuarial Science cum laude at the virtual graduation in December 2021. He returned to Stellenbosch in April 2022 to receive the medal in person at the April graduation ceremony of the Faculty of Economic and Management Sciences.

Over the last four years, Moorcroft has passed all his subjects for the BCom and Honours (Actuarial Science) Degrees with distinction, achieving 90%-99% in half of his modules. During his honours year, he was the top student and he achieved the highest average mark attained in the past five years.

Furthermore, he reached the standard necessary to be recommended for exemptions from all the Actuarial Society of South Africa (ASSA) examinations available to date in his studies, which is a very rare achievement.

Speaking about his award, Moorcroft says: "There are so many exceptional final-year and postgraduate students who graduated in my

group, and it is a big surprise and huge honour to be recognised in this way. This is the 'cherry on top' of a rewarding and enjoyable Stellenbosch chapter.

"It was quite a challenge to balance my actuarial studies with other responsibilities during the COVID-19 period, so I also view this award as recognition of the hours of commitment and hard work it took to navigate this journey."

Moorcroft adds that many people have supported him and contributed to his success. "I cannot take sole credit for this award. I am very grateful for the unfailing support and encouragement of those who have been closest to me through the ups and downs of the past four years."

He believes embracing his studies with a team mindset helped him achieve his goals. "This is an approach that I would recommend to any incoming student. I was lucky enough to be part of a solid group of classmates. We supported one another, learned from one another's successes and mistakes, helped one another grasp the key concepts, and formed great friendships."

Moorcroft, who hails from Gqeberha in the Eastern Cape, demonstrated significant leadership potential as primarius of the Simonsberg Residence in 2020/21. He was also the head boy of Kingswood College in Makhanda and captained the first hockey and water polo teams during his high school years.

When he is not studying or fulfilling his other responsibilities, he enjoys putting on his running shoes and getting active. "For me, it is the best medicine for the mind and soul."

He joined Discovery Bank as an actuarial analyst in Sandton at the start of the year and describes it as "a brilliant experience so far". He also plans to qualify as a Fellow of the Actuarial Society of South Africa (FASSA).

STUDENT ACHIEVEMENTS

Department congratulates third-year prize winners

Every year the Department awards prizes to the best final-year student in each of the four subjects: Actuarial Science, Financial Risk Management, Mathematical Statistics and Statistics. For the 2021 academic year the prizes were awarded to:

- Louie Gerber (Actuarial Science),
- Jean Durand (Mathematical Statistics),
- Tjaart Johannes Van der Walt (Financial Risk Management), and
- Jessie Shannon Leukes (Statistics).



The prizes were handed out at an in-person awards ceremony on 17 March 2022. It was exciting to have staff and students present as a group for the first time in two years. The ceremony commenced with talks by Dr Sven Buitendag from Capitec and Mr Guy Chennels from Discovery. Sven and Guy gave advice to graduates entering the working world, inspiring them in a humorous way. The ceremony was followed by drinks and snacks in the foyer where all engaged in lively discussion.

Well done to the prize winners. We're proud of you.



Bursary awards and industry partnerships

The Department continues to embrace the partnership with industry and the continuous generous financial support provided towards offering bursaries to our students. We hope that this will be a long-lasting sustainable partnership for many years ahead. In 2022, two bursaries were awarded from the donation by Faantjie and Lettie Pretorius, two from Departmental funds and 24 bursaries were awarded to students from the funds provided by First Rand and Correlation Risk.

The Department appreciates the Operations Research Society of South Africa (ORSSA) for sponsoring the ORSSA membership fees for five master's students in Financial Risk Management.

Department's graduates in 2022: PhD and Masters

Name: Inès Mbonda

Degree: PhD (Mathematical Statistics)

Topic of thesis: A quantitative analysis of investor over-reaction and under-reaction in the South African equity market: A mathematical statistical approach

Supervisor: Prof WJ Conradie and Dr R Lötter

Name: Erika Beukman

Degree: MCom (Statistics)

Topic of thesis: Improving collaborative filtering with fuzzy clustering

Supervisor: Prof SJ Steel

Name: Claudia Di Santolo

Degree: MCom (Statistics)

Topic of thesis: Image analysis of brain tumours through the use of artificial intelligence

Supervisor: Dr C Muller

Name: Ulrich Kotze

Degree: MCom (Statistics)

Topic of thesis: Resampling algorithms for multi-label classification

Supervisor: Dr T Sandrock

Name: Karla Laubscher

Degree: MCom (Mathematical Statistics)

Topic of thesis: Interpretation of an artificial neural network as a black box model

Supervisor: Prof DW Uys

Name: Johannes Eybers

Degree: MCom (Actuarial Science)

Topic of thesis: A spatial agent-based model of the COVID-19 pandemic in South Africa

Supervisor: Mr R Clover

Name: Cara Steenkamp

Degree: MCom (Financial Risk Management)

Topic of thesis: Modern portfolio optimisation under regime switching

Supervisor: Dr M Alfeus

Name: Kgomotso Sebitlo

Degree: MCom (Financial Risk Management)

Topic of thesis: Twitter predicts Naspers share price

Supervisor: Prof WJ Conradie

PhD recipient blazes trail for women in science

Inès Aude Tiekwe Mbonda recently graduated with a PhD in Mathematical Statistics with a dissertation entitled "A quantitative analysis of investor over-reaction and under-reaction in the South African equity market: A mathematical statistical approach" under the supervision of Prof WJ Conradie and Dr R Lotter. Her PhD seeks a robust methodology to solve problems arising in investment strategies. Inès has an interesting story to share about her PhD journey.

Tell us about yourself and your family

I was born and raised in Cameroon, in a family of six. My parents were both teachers and emphasised the importance of education. We were taught to value education, and I have loved mathematics and science all my life.

I attended primary, secondary, and high school in Bafang in West Cameroon where I matriculated with mathematics and physical sciences. While in secondary school, I was awarded the prize for best female student in Mathematical Sciences and selected to participate in the Young Girls in Science Summer School which was aimed at promoting Mathematics and Science Education for women in Cameroon.

After completing high school, I enrolled for a Bachelor's degree program in Mathematics at the University of Douala in the Littoral region of Cameroon. I subsequently obtained a government scholarship to study for a master's degree in Finance at the Central African Virtual University, Yaoundé, Cameroon.

During my time at the University, I attended many international conferences and workshops, for example, the summer school on "Complements in analysis and applications" held in Abidjan, Ivory Coast, and organised by CIMPA (International Centre for Pure and Applied Mathematics) and the workshop on common pool resource experiments held at AIMS-Senegal and organised by the German Academic Exchange Service (DAAD).

I was awarded a prestigious scholarship from the African Institute for Mathematical Sciences (AIMS) to study for a Master of Science in Mathematical Sciences at the AIMS centre in Ghana. At AIMS,

I was exposed to various applications of mathematics, and I realised the value of the maths education I had acquired and felt more motivated to continue along the same path to the highest possible level.

After completing the AIMS master's program, I saw an advert from the Graduate School of Economics and Management Sciences (GEMS) about a PhD fellowship at Stellenbosch University. I did not hesitate to apply because the research project was a perfect fit for my mathematics and finance skills. In addition, it provided an opportunity for me to combine these skills to solve a real-world problem. Fortunately, my application was successful, and I received a four-year scholarship to study for a PhD in the Department of Statistics and Actuarial Science at Stellenbosch University.

Tell us more about your PhD studies

My PhD project was multidisciplinary and was supervised by Prof Conradie and Dr Lötter. It concerned the application of mathematics and statistics to solve a problem arising in investment, specifically, investor behaviour in financial markets. Investors face difficulties when making decisions in the stock market; they overreact and underreact to market information. Two mathematical



statistical models were employed: the Fuzzy C-Means model and the Bayesian model, to investigate whether South African investors tend to overreact and/or underreact over time. The Fuzzy C-Means model is based on the technique of pattern recognition and uses the well-known Fuzzy C-Means clustering algorithm. The Bayesian model is based on the classical Bayes' theorem, which describes the relationship between the probability of an event conditional upon another event.

The data used for the study consisted of 100 JSE-listed shares with the largest market capitalisations for every year over the 2006-2016 period. Results from the study revealed that both overreaction and underreaction exist across the three main financial sectors. However, the sectors exhibit unique, erratic patterns, which suggest that the behavioural phenomena are largely unpredictable. The two techniques were also tested for robustness.

Tell us more about your PhD experience

The path to my PhD was one massive learning experience. I learned new things every single day. I acquired a lot of knowledge in behavioural finance and beyond. I also had the opportunity to interact with other scholars from different countries in our weekly seminars, which exposed me to people from different cultural backgrounds and experiences.

During my PhD journey, I had the opportunity to attend the London Mathematical Laboratory summer school in London. I also participated in the Deep Learning Indaba at the University of Witwatersrand, Johannesburg, and the African Women in Mathematics Conference at Stellenbosch University. In addition, I took part in a boot camp on Data Science organised by Stellenbosch University's Launchlab. After submitting my thesis, I interned as a data scientist for six months at the COVID-19 data centre based in Columbia. My task during the internship consisted of using data to generate visualisations of the COVID-19 pandemic in the global south countries using Tableau software and to investigate/suggest potential solutions. I had to search through diverse data collections, process and visualise to generate evidence for more

informed decision-making. In addition, I created dashboards which were published on the Tableau online repository.

What I like about my experience is the valuable life skills I have learned during the PhD journey which will be very helpful for my career. French was the primary language of instruction during my primary, secondary, high school, and undergraduate studies. Studying for my PhD in English has greatly improved my written and oral communication skills. I also developed the ability to teach myself challenging topics regardless of their level of complexity or difficulty. Collaboration and time management are other important skills which I have further developed, and I learned very quickly to maximise or make the most of the time I have.

It was not easy being a spouse, mother and student but I have learned to prioritise things appropriately to ensure that my career doesn't overtake all aspects of my life. Whilst I was studying, I set up a work schedule where I would work during the day when my kids were at the creche and for some hours in the evening after they had gone to sleep. My family was an integral part of my PhD as my programme was challenging at times. Having the support of my spouse has been crucial. I can't imagine how I would have coped without my family during my time in Stellenbosch as an international student.

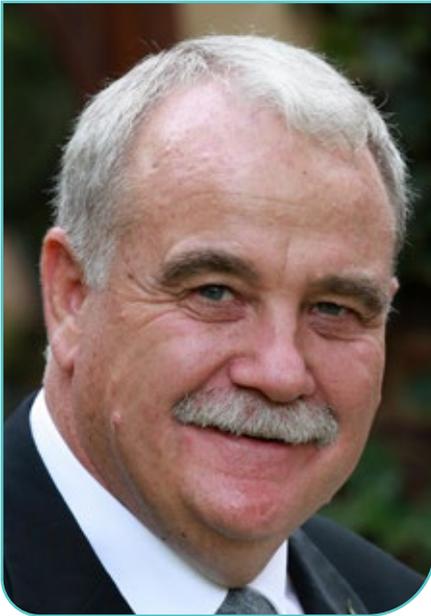
“Keep your goal in mind, believe in your dream and work hard...”

What piece of advice can you offer to prospective students?

My advice to prospective students is to keep your goal in mind, believe in your dream and work hard. You're surely going to have some challenges; learn how to overcome them. At the end you'll get the reward. To any student who doesn't know what area of study they should pursue, I can say that my experience as a woman in science has been wonderful. I was born in an environment where science in general was considered a "male subject". I was passionate about science, and I went for it. I would encourage you to not hesitate to go for what you're passionate about. If you understand that science is for everyone, your gender and background shouldn't be considered an obstacle to your ambitions and aspirations.

Alumnus offers advice and lessons learned from a long and distinguished career

Stellenbosch University alumnus Riaan de Jongh retired as Director of the Centre for Business Mathematics and Informatics (Centre for BMI) at North-West University (NWU) in 2021. He tells us about his career.



Background

Pieter Juriaan (Riaan) de Jongh was born in Malmesbury and grew up in Goudini, near Rawsonville. In 1974 he enrolled for a BCom degree (with majors in Mathematics, Mathematical Statistics,

and Accountancy) at Stellenbosch University (SU) and completed a BCom (Hons) in Mathematical Statistics at the same University in 1977. He then completed two years of national service, first in the Airforce (Valhalla, Pretoria) and then in the Navy (Simon's Town).

In 1980 he was offered a job as statistician at the Institute for Maritime Technology (IMT) where he worked for more than 15 years. During his time at IMT he completed an MSc at the University of South Africa (UNISA, 1982), a PhD at the University of Cape Town (UCT, 1985) and spent a post-doctoral year at the University of North Carolina at Chapel Hill (1986-1987). After a two-year stint at Deloitte (Pretoria) he moved to Potchefstroom in 1998 as Professor of Mathematical Sciences at the Centre for BMI. He became Director of the Centre in 2002 and retired in 2021.

During the first 20 years of his professional career, he was mostly involved in conducting

and managing projects for clients in the defence force, government, and industry. The practical problem-solving focus continued at the Centre for BMI, although he concentrated more on teaching students creative problem-solving skills whilst undertaking projects for companies, mainly in the financial services industry. During his career he played a leading role in more than a 100 industry projects and directed more than 500 MSc industry-directed student projects.

Career highlights

In 2010 he was approached by the Actuarial Society of South Africa (ASSA) to represent ASSA on the global syllabus committee for the new Certified Enterprise Risk Actuary (CERA) designation. He later served on the CERA Review Panel and additionally served on panels that evaluated the CERA designation of the actuarial societies of America and Sweden, amongst others. He also played a leading role in several other societies, notably the Statistical Society of South Africa (SASA), the Institute of Certificated and Chartered Statisticians of South Africa (ICCSSA), the Operational Research Society of South Africa (ORSSA), the International Society for Business and Industrial Statistics (ISBIS), the Global Association of Risk Professionals (GARP) and the Professional Risk Management International Association (PRMIA). Due to the international network that he built up over the years, he was invited by the Mathematisches Forschungsinstitut Oberwolfach to attend the Mathematics and Statistics of Quantitative Risk Management meeting in Germany in 2015. An invitation to Oberwolfach is an honour received by very few South African mathematicians.

Although primarily interested in practical problem solving, he has written many publications

and received many Best Paper awards, which include the Sichel Medal (SASA, twice), the Tom Rozwadowski Medal (ORSSA), the RGA prize (ASSA) and the Risk.net (UK) prize for the best paper published in the *Journal of Operational Research* in a particular year. He also received two thought leader awards, one from SASA and the other from ORSSA, and was a finalist in the 'management of research' category of the National Science and Technology Forum (NSTF). He was invited by the deputy director of the Department of Science and Innovation (DSI) to serve on the working group and later the steering committee of the National Institute of Theoretical and Computational Sciences (NITheCS).

Stellenbosch University

Recalling his time at Stellenbosch, Riaan says: "I had a lot of fun as a Matie, so much so that my studies played second fiddle to social and sport activities and student life in general. In my honours year, I remember that one morning Prof Anton Schoeman called Helderberg hostel and enquired whether Mr De Jongh was planning to attend his Stochastic Processes lecture. I was still asleep, but I made it to the class in 15 minutes!"

Riaan praises his former lecturers: "I learnt valuable lessons from lecturers Anton Schoeman, Niël le Roux and Willie Conradie. They were very enthusiastic about their subjects and had an interest in the individual student. The basic probability theory taught by Prof Schoeman, and the matrix theory and interest rate calculus taught by Profs Niël le Roux and Willie Conradie respectively, formed my academic foundation.

"Academically, I learnt the most from my PhD supervisor, Prof Tertius de Wet, who was also my boss at IMT. He played a major role in developing my career and I am fortunate that we can still collaborate on interesting research problems that make a difference in the banking industry."

Lessons learned

Riaan's long and distinguished career has taught

him several valuable lessons. "I remember a fellow student, unlike myself and many of the other students, who had a clear vision of the career that he wanted to pursue after university. It was no surprise that Jacko Maree became the CEO of Standard Bank in his forties. The strength of a clear vision played a major role in the development of the Centre for BMI at NWU."

As many of us have experienced, there is a big leap from university to working life. Riaan says: "When I left university and started to work at IMT it came as a shock to my system. I suddenly realised that I knew little about Statistics (the interviewer asked me about several methods that I did not know) and I later realised that I lacked knowledge from other fields as well as the skills to function effectively in business and industry. At BMI I used these lessons to design the BMI curricula so that when students leave university, they generally experience a soft landing and have the skills to add value in industry from day one."

“We live in the most exciting times ever for statisticians...”

Riaan's many decades of experience afford him perspective. He says: "It is important to learn from the past and from the available literature. Many problems are not new and even new technology has a history. For instance, when the term Data Science was coined, I read some of the definitions of the term and thought: I have been doing this since 1980! The only thing that has really changed is the power of the computer and the emphasis on prediction."

Riaan offers encouragement to those studying or just beginning their careers: "I truly believe we live in the most exciting times ever for statisticians (and data scientists). My horizon is getting shorter, and I envy the youngsters who have plenty of time available to exploit the many exciting opportunities."

Final words

Riaan offers the following wisdom to students: "I advise students to build networks with other fellow professionals as soon as possible and be prepared to take on risk, because it is with the difficult projects/problems that you are going to learn the most. Believe in yourself and your own capability, stay positive, and practice persistence in all your endeavours!"

PUBLISHED PAPERS

- ALFEUS M, HE X, ZHU S. 2021. Regularization effect on model calibration. *Journal of Risk*, 24(3):1-27.
- ALFEUS M, KANNAN S. 2021. Pricing exotic derivatives for cryptocurrency assets—A Monte Carlo perspective. *Journal of Mathematical Sciences*, 11(4):597-619.
- ALVES CAPF, GOLDSTEIN A, TEIXEIRA SR, MARTIN-SAAVEDRA J, FADDA G, CASCHERA L, KIDD M, GONCALVES F, MCCORMICK E, FALK J, ZOLKIPLI-CUNNINGHAM Z, VOSSOUGH A, ZUCCOLI G. 2021. Involvement of the spiral cord in primary mitochondrial disorders: A neuroimaging mimicker of inflammation and ischemia in children. *PEDIATRICS*, 42(2):389-396.
- CALDER B, MALHERBE ST, STANLEY K, KIDD M, WALZL G, CHEGOU NN. 2021. Identification of novel salivary candidate protein biomarkers for tuberculosis diagnosis: A preliminary biomarker discovery study. *Tuberculosis*, 130.
- CHENDI BH, SNYDERS CI, TONBY K, JENUM S, KIDD M, WALZL G, CHEGOU NN, DYRHOL-RIISE A. 2021. A plasma 5-marker host biosignature identifies tuberculosis in high and low endemic countries. *Frontiers in Immunology*, 12:1-13.
- CILLIERS K, MENEZES A, WEBBER TR, DOCKRELL HM, CLIFF JM, CHEGOU NN, DU PLESSIS N, LOXTON AG, KIDD M, DJOBA SIAWAYA J F, RONACHER K, WALZL G. 2021. Mycobacterium tuberculosis-stimulated whole blood culture to detect host biosignatures for tuberculosis treatment response. *Tuberculosis*, 128.
- DE SMIDT JJA, ODENDAAL HJ, NEL DG, NOLAN H, DU PLESSIS CA, BRINK LT, OELOFSE A. 2021. The effects of in utero exposure to teratogens on organ size: A prospective paediatric study. *Journal of Developmental Origins of Health and Disease*, 12(5):748-757.
- DE VRIES PJ, LECLEZIO L, LUBBE S, KRUEGER D, SAHIN M, SPARAGANA S, DE WAELE L, JANSEN A. 2021. Multivariate data analysis identifies natural clusters of Tuberous Sclerosis Complex Associated Neuropsychiatric Disorders (TAND). *Orphanet Journal of Rare Diseases*, 16(447):1-10.
- HOFMEYER DP. 2021. Fast exact evaluation of univariate kernel sums. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 43:447-458.
- KALUNGI A, KINYANDA E, WOMERSLEY JS, JOLOBA ML, SSEMBAJJWE W, NSUBUGA R, KALEEBU P, LEVIN J, KIDD M, SEEDAT S. 2021. TERT rs2736100 and TERC rs16847897 genotypes moderate the association between internalizing mental disorders and accelerated telomere length attrition among HIV+ children and adolescents in Uganda. *BMC Medical Genomics*, 14:15-25.
- KANSKY R, KIDD M, FISCHER J. 2021. Does money "buy" tolerance toward damage-causing wildlife? *Conservation Science and Practice*, 3(3):1-16.
- KANSKY R, KIDD M, FISCHER J. 2021. Understanding drivers of human tolerance towards mammals in a mixed-use transfrontier conservation area in southern Africa. *Biological Conservation*, 254.
- LOCHNER C, DEMETRIOU S, KIDD M, COETZEE BJ, STEIN DJ. 2021. Hair-pulling does not necessarily serve an emotion regulation function in adults with trichotillomania. *Frontiers in Psychology*, 12.
- LOCHNER C, SANDENBERGH D, KIDD M, STEIN DJ. 2021. Working memory training in adults with trichotillomania: a 5-week, single-blind, randomized control study. *Journal of Obsessive-Compulsive and Related Disorders*, 28.
- LUBBE S. 2021. Linear discriminant analysis for multiple functional data analysis. *Journal Of Applied Statistics*, 48(11):1917-1933.
- LUBBE S, FILZMOSER P, TEMPL M. 2021. Comparison of zero replacement strategies for compositional data with large numbers of zeros. *Chemometrics And Intelligent Laboratory Systems*, 210:1-11.
- MAMPUNYE L, VAN DER MERWE NC, GRANT KA, PEETERS AV, SAWE RT, FRENCH DJ, MOREMI KE, KIDD M, VAN EEDEN PC, PIENAAR FM, KOTZE MJ. 2021. Pioneering BRCA1/2 Point-of-Care testing for integration of germline and tumor genetics in breast cancer risk management: A vision for the future of translational pharmacogenomics. *Frontiers in Oncology*, 11.

MARTIN-SAAVEDRA J, TEIXEIRA SR, ALVES CAPE, GONCALVES F, TIERRADENTRO-GARCIALO, KIDD M, MURARESKU C, GOLDSTEIN A, VOSSOUGH A. 2021. Genetic and clinical predictors of ataxia in pediatric primary mitochondrial disorders. *CEREBELLUM*.

MORRIS TC, HOGGART CJ, CHEGOU NN, KIDD M, GOLIATH R, ONI T, WILKINSON KA, DOCKRELL HM, SICHALI L, BANDA L, CRAMPIN AC, FRENCH N, WALZL G, LEVIN M, WILKINSON RJ, HAMILTON MS. 2021. Evaluation of host serum protein biomarkers of tuberculosis in sub-Saharan Africa. *Frontiers in Immunology*, 12:1-12.

NOLTE H, SOLOMONS RS, SPRINGER PE, KIDD M, AFRICA EK. 2021. The effectiveness of gross motor interventions in improving motor function in childhood apraxia of speech. *Early Child Development and Care*.

OLIVIER SE, DE WAARD L, MULLER CJB, GEBHARDT GS. 2021. Delivery outcomes of patients with pre-eclampsia at 27-34 weeks' gestation at Tygerberg Hospital, Cape Town, South Africa: A retrospective observational study. *South African Medical Journal*, 111(5):437- 443.

RODWELL DT, VAN DER MERWE CJ, LUBBE S. 2021. Categorical CVA biplots. *Computational Statistics and Data Analysis*, 163.

SOLOMONS J, KRAAK WJ, KIDD M, AFRICA EK. 2021. The effect of a rhythmic movement intervention on selected bio-motor skills of academy rugby players in the Western Cape, South Africa. *International Journal of Sports Science and Coaching*, 16(1):91-100.

SPIES G, MOKAYA J, STEADMAN J, SCHUITMAKER N, KIDD M, HEMMINGS SMJ, CARR JA, KUIVANIEMI SH, SEEDAT S. 2021. Attitudes among South African University staff and students towards disclosing secondary genetic findings. *Journal of Community Genetics*, 12:171-184.

SWART AC, DU TOIT T, GOURGARI E, KIDD M, KEIL M, FAUCZ FR, STRATAKIS C. 2021. Steroid hormone analysis of adolescents and young women with polycystic ovarian syndrome and adrenocortical dysfunction using UPC2-MS/MS. *Pediatric Research*, 89:118-126.

TERBLANCHE NS, KIDD M. 2021. Exploring an in-store customer journey for customers shopping for outdoor apparel. *Journal of Retailing and Consumer Services*, 63:1-11.

VAN STRYP O, AFRICA EK, KIDD M, DUNCAN MJ. 2021. The effect of active brain-breaks during a typical school day on the in-school physical activity patterns of Grade 1 children in the Western Cape, South Africa. *Education* 3-13.

VAN WYHE KS, LAUGHTON B, COTTON MF, MEINTJES E, VAN DER KOUWE A, BOIVIN M, KIDD M, THOMAS K. 2021. Cognitive outcomes at ages seven and nine years in South African children from the children with HIV early antiretroviral (CHER) trial: a longitudinal investigation. *Journal of the International AIDS Society*, 24.

VERMOOTEN N, KIDD M. 2021. Relational dynamics amongst personal resources: Consequences for employee engagement. *SA Journal of Human Resource Management*, 19:1-12.

CHAPTERS IN BOOKS

NIENKEMPER-SWANEOEL J, LE ROUX NJ, LUBBE S. 2021. A Simulation Study for the Identification of Missing Data Mechanisms Using Visualisation. In: T. Chadjipadelis, B. Lausen, A. Markos, T.R. Lee, A. Montanari, & R. Nugent (eds.). *Data Analysis and Rationality in a Complex World*. Switzerland: Springer Cham. 205-213.

PRESENTATIONS

Staff presentations at conferences and seminars

Conferences

Data Science, Statistics & Visualisation (DSSV) conference, 7-9 July 2021, online.

Nienkemper-Swanepoel, J., Lubbe, S., & le Roux, N. GPABin for principal component analysis biplots of multiple imputed data.



63rd World Statistics Conference, 11-16 July 2021, online.

Lubbe, S., le Roux, N., Nienkemper-Swanepoel, J., & van der Merwe, C. Correspondence analysis related biplot visualisations to aid analyses of categorical data containing missing values.

IPS 100: On the visualisation of digital socio-economic data



62nd Annual Conference of the South African Statistical Association, 1-3 December, hybrid.

Le Roux, N. Extending GPABin to visualise missing multivariate continuous data.
Sandrock, T. An Algorithm for Generating Multi-Label Classification Data.



Steyn, L. Shrinkage methods for the estimation of the extreme value index.
Uys, D. Forward stagewise linear regression for ensemble methods.
Van der Merwe, C.J., Sandilands, D. & Lubbe, S. Exploding biplots with density axes in Plotly.

11th World Congress of the Bachelier Finance Society, 13-17 June 2022, Hong Kong

Alfeus, M. Toward A General Framework for Modelling Roll-Over Risk.
Mesias presented a conference talk at the 11th World Congress of the Bachelier Finance Society. His talk was on a model that adapts roll-over risk framework to the South African interest rate market. This framework explicitly models risk justifying the presence of the basis spread (e.g., a spread between JIBAR and SAFEX rate) observed in the market. In his presentation, he showed how the model can be used to estimate the Overnight Index Swap (OIS) for emerging markets, calibrate the model to all available interest rate instruments in South Africa, and how to capture dependence structure between linear & non-linear interest rate derivatives using Wishart stochastic processes.

Seminars

Presenter: Alfeus, M.

Title: Rough Forward Volatility Structure of the Crude Oil Futures Market.

Date: 25 January 2022

Host: University of Giessen, Germany.

In this seminar talk, Mesias presented a model for the hump volatility structure of commodity derivatives markets within the rough volatility modelling framework. Due to the complexity of the model (a model is neither Markovian nor semimartingale) and data, a numerical scheme has been developed and proven to perform better. To aid the calibration process of inferring model parameters from Crude Oil futures and Option data, the calibration is done in two stages. Empirical results show that Hurst parameter should not be constant in rough volatility model; it should be calibrated every day.

Presenter: Alfeus, M.

Title: Quantitative Finance: Toward A General Framework for Modelling Roll-Over Risk.

Date: 10 March 2022

Host: The SIAM Activity Group on Financial Mathematics and Engineering (SIAG/FME)
Mesias was nominated by Professor Sam Cohen from the University of Oxford as one of the emerging early career researchers in Quantitative Finance. Mesias presented a paper on stochastic modelling of interest rate markets. The main goal is to capture the persistent phenomenon of high observed basis spread. The volatility of the modelling variables is assumed to be driven by a Wishart process. The model is fitted to interest rate data from the South African financial market.

UPCOMING SEMINARS

SEMINAR PROGRAMME: SECOND SEMESTER 2022

Stellenbosch University Department of Statistics and Actuarial Science

12 August	Nicholas Danks (Trinity College Dublin, Ireland) <i>Principle components, PLS components, or sum scores: from conceptual variable to statistical representation</i>
26 August	Ludger Overbeck (University of Giessen, Germany) <i>Market Risk and Enterprise-wide risk management</i>
16 September	Jani Pretorius (Mediclinic, Stellenbosch) <i>Using predictive analytics to risk adjust patient mortality</i>
30 September	Dino Michael (Deloitte & Touche, Midrand) <i>Time-series forecasting to predict real estate demand</i>
14 October	Guy Konan (Department of Statistics and Actuarial Science, SU) <i>Journeying toward PhD studies in Mathematical Statistics</i>

Enquiries: Elizna Huysamen
E-mail: krugere@sun.ac.za

All seminars start at 13h00 in room 2048 of the Van der Sterr Building, c/o Victoria and Bosman Streets, Stellenbosch, but can also be attended via Microsoft Teams by using the following link: [Click here to join the meeting](#)

Share with us

We hope you enjoyed this edition of the Department's newsletter. Please send us your feedback. If you have some news you would like to share, or have ideas for future editions, please let us know. We'd love to hear from you. Please send to Elizna Huysamen (krugere@sun.ac.za). Please contact Elizna to be added to the newsletter distribution list.