# Welcome to the
# Graduation Ceremony
# of the
# University of Johannesburg
# 17 May 2018

# Welkom by die
# Gradeplegtigheid
# van die
# Universiteit van Johannesburg
# 17 Mei 2018

# Le a Amogelwa
# Moletlong wa Dikapešo wa
# Yunibesithi ya Johannesburg
# 17 Mopitlo 2018

# Niyamukelwa
# eMcimbini wokweThweswa kweZiqu
# weNyuvesi yaseJohannesburg
# 17 kuNhlaba 2018

# UNIVERSITY OF JOHANNESBURG

## CHANCELLOR

Prof NS Ndebele
BA (Lesotho), MA (Cambridge UK), PhD (Denver USA)

## SENIOR OFFICE-BEARERS OF THE UNIVERSITY

## VICE-CHANCELLOR AND PRINCIPAL

Prof T Marwala
BS Eng (Case Western Reserve USA), MEng (UP), PhD (Cambridge UK)

### DEPUTY VICE-CHANCELLOR ACADEMIC

Prof A Parekh
BA, BA Hons, MA (UDW), MA (Kansas USA), DPhil (UDW)

### DEPUTY VICE-CHANCELLOR: RESEARCH AND INTERNATIONALISATION

Prof S Sinha
BEng, MEng, PhD (UP)

### REGISTRAR

Prof IC Burger
BA, HEd, BA Hons, MA, PhD (RAU)

### CHIEF FINANCIAL OFFICER

Ms N Mamorare
BCom (Rhodes), BCom Hons (UKZN), CA (SA)

### DEPUTY VICE-CHANCELLOR: EMPLOYEES AND STUDENT AFFAIRS

Ms KC Mketi
BA (Bophut), BA Hons (RAU), MBL (Unisa)

### CHIEF OPERATING OFFICER

Prof A Swart
NDip, NHDip (TWR), BEd, MEd (RAU), DTech (TWR)

### GENERAL COUNSEL

Prof PH O'Brien
BCom, LLB, LLM, LLD (RAU)

### SENIOR EXECUTIVE DIRECTOR IN THE VICE-CHANCELLOR'S OFFICE

Dr N Vukuza
BA (Fort Hare), BA Hons (Rhodes), DTE (UNISA), MA (Wits), PhD (Stellenbosch)

# EXECUTIVE DEANS

## COLLEGE OF BUSINESS AND ECONOMICS
Prof D van Lill
BSc, BSc Hons, MSc, PhD (US)

## FACULTY OF ART, DESIGN AND ARCHITECTURE
Prof F Freschi
BA (Wits), BA Hons (UCT), PhD (Wits)

## FACULTY OF EDUCATION
Prof SJ Gravett
BA, HEd (PU for CHE), BEd, MEd, DEd (RAU)

## FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT
Prof C Mbohwa (Acting)
BSc Eng (Hons), OMMS, PhD (TMIT Japan)

## FACULTY OF HEALTH SCIENCES
Prof S Nalla (Acting)
BSc (Wits), BSc Hons (Wits), Certificate ELLD (UJ), PhD (Wits)

## FACULTY OF HUMANITIES
Prof AB Broadbent
BA, BA Hons, MPhil, PhD (Cambridge UK)

## FACULTY OF LAW
Prof LG Mpedi
B Juris, LLB (Vista), LLM (RAU), LLD (UJ)

## FACULTY OF SCIENCE
Prof D Meyer
BSc, BSc Hons, MSc (RAU), PhD (California USA)

# MEMBERS OF COUNCIL

## CHAIRPERSON
Mr MS Teke

## DEPUTY CHAIRPERSON
Dr Y Ndema

## MEMBERS
Prof H Abrahamse
Mr FM Baleni
Ms S Dlamini
Ms K Gugushe
Prof D Hildebrandt
Mr G Khosa
Prof C Landsberg
Dr J Manyaka
Prof T Marwala
Ms Z Matlala
Ms BJ Memela-Khambula
Mr F Netshiavha
Prof A Parekh
Mr C Phetla
Dr WP Rowland
Mr K Thomas
Dr M Tom

# Programme

**Thursday, 17 May 2018 at 17:00**

To ensure good order during the ceremony all those present are requested to leave the Auditorium only after the ceremony has been concluded.

The academic procession enters the Auditorium and the members of the procession take their seats on the stage.

The choir sings Gaudeamus Igitur (or a CD is played) while those present remain standing.

The Chancellor constitutes the congregation.

Choir.

Welcome.

The relevant Executive Dean presents the candidates to the Chancellor for the conferment of a degree/diploma/certificate.

Singing of the National Anthem.

The Chancellor dissolves the congregation.

The academic procession leaves the Auditorium while those present remain standing.

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# Lenaneo

**Labone, 17 Mopitlo 2018 ka 17:00**

Go kgonthiša gore dilo di sepela ka tshwanelo nakong ya moletlo, bohle bao ba tlilego moletlong ba kgopelwa go tšwa ka Holong ya kopano feela ka morago ga ge moletlo o phethilwe.

Sehlopha sa dirutegi se tsena ka Holong ya kopano gomme maloko a sehlopha se a dula ditulong tša ona sefaleng.

Khwaere e opela Gaudeamus Igitur (goba CD e tlo bapalwa) mola bao ba lego gona ba tšwela pele go ema.

Mokhanseliri o kopanya phuthego.

Khwaere.

Dikamogelo.

Hlogophethiši ya maleba ya lefapha e hlagiša dialoga go Mokhanseliri gore di newe tikrii/diploma/setifikeiti.

Go opelwa ga Koša ya Setšhaba.

Mokhanseliri o phatlalatša phuthego.

Sehlopha sa dirutegi se tšwa ka Holong ya kopano mola bao ba lego gona ba tšwela pele go ema.

# Program

**Donderdag, 17 Mei 2018 om 17:00**

Ter wille van die ordelike verloop van die plegtigheid
word alle aanwesiges vriendelik versoek
om die Ouditorium nie voor die einde van die plegtigheid te verlaat nie.

Die akademiese prosessie kom die Ouditorium binne en neem op die verhoog plaas.

Die koor sing Gaudeamus Igitur (of ‘n CD word gespeel) terwyl die aanwesiges staan.

Die Kanselier stel die kongregasie saam.

Koor.

Verwelkoming.

Die betrokke uitvoerende dekaan stel die kandidate aan die Kanselier voor vir die toekenning van ‘n graad/diploma/sertifikaat.

Sing van die volkslied.

Die Kanselier ontbind die kongregasie.

Terwyl die aanwesiges bly staan, verlaat die akademiese prosessie die Ouditorium.

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# Uhlelo

**uLwesine, 17 kuNhlaba 2018 ngele-17:00**

Ukuze kuqinisekwe ukuthi konke kuhamba kahle ngesikhathi somcimbi, bonke abakhona bacelwa ukuba baphume eHholweni kuphela lapho umcimbi usuphothuliwe.

Udwendwe lezifundiswa lungena ehholweni bese amalungu odwendwe ahlala phansi esiteji.

Ikwaya icula i-Gaudeamus Igitur (noma kudlalwa iCD) ngalenkathi labo abakhona besamile.

UShansela uhlanganisa ibandla.

Ikwaya.

Ukwamukelwa.

Izinhloko Eziyiziphathimandla ezithintekayo zethula abafundi kuShansela weNyuvesi ukuze bathole idigiri/idiploma/isitifiketi.

Kuculwa iHubo Lesizwe.

# Gaudeamus Igitur

Gaudeamus igitur,
Juvenes dum sumus;
Post iucundum iuventutem,
Post molestam senectutem
Nos habebit humus.

Vivat academia,
Vivant professores,
Vivat membrum quodlibet,
Vivat membra quaelibet;
Semper sint in flore!

### English

Let us rejoice, therefore,
While we are young.
After a pleasant youth
After a troubling old age
The earth will have us.

Long live the academy!
Long live the professors!
Long live each student;
Long live the whole fraternity;
For ever may they flourish!

### Sesotho sa Leboa

Ka gona, a re thabeng,
Re sa le ba bafsa.
Ka morago ga bofsa bjo bo bose
Ka morago ga go tšofala mo go nago le mathata
Lefase le tla ba le rena.

Phela thuto phela!
Phelang diprofesa phelang!
Phelang baithuti phelang;
Phela kagišano ka botlalo phela;
O ka re ba ka phela gabotse goyagoile!

### Afrikaans

Laat ons dan vrolik wees,
Terwyl ons jonk is;
Na ’n aangename jeug.
Na ’n onaangename oudag,
Sal die aarde ons hou.

Lank lewe die universiteit,
Lank lewe die professore,
Lank lewe elke student,
Lank lewe al die studente,
Mag hulle vir ewig hul jeug behou!

### Zulu

Ngakho, masithokoze
Sisebasha nje.
Emva kobumnandi bobusha
Emva kwezinkinga zobudala
Umhlaba uzosithatha.

Phambili ngemfundo!
Phambili boSolwazi!
Phambili nakuwe mfundi;
Phambili ngenhlangano yonke;
Maziqhubeke ngonaphakade!

# QUALIFICATIONS

## 1. National Diploma (NDip)

**Basenga,** Nadine (Engineering: Civil)
**Bene,** Nkosinathi (Engineering: Civil)
**Chabikuli,** Joy (Engineering: Civil)
**Chavalala,** Gratitude Vukona (Engineering: Civil)
**Chokwe,** Matsobane Jerry (Engineering: Civil)
**Dinyake,** Tlou Stephen (Engineering: Civil)
**Dlamini,** Vuyo (Engineering: Civil)
**Du Plessis,** Pieter Eksteen (Engineering: Civil)
**Elhadj,** Hamza (Engineering: Civil)
**Fitzpatrick,** Warrick (Engineering: Civil)
**Govender,** Karmany (Engineering: Civil)
**Ilunga,** Kisimba (Engineering: Civil)
**Kibulungu,** Joel Lutombo (Engineering: Civil)
**Kilani,** Tshepo Sizwe (Engineering: Civil)
**Kobue,** Joy Prscilla (Engineering: Civil)
**Kwaza,** Nobuhle Nontsikelelo (Engineering: Civil)
**Labase,** Keletso (Engineering: Civil)
**Langa,** Thapelo William (Engineering: Civil)
**Lavhengwa,** Vhaande Lucky (Engineering: Civil)
**Magadani,** Phumudzo (Engineering: Civil)
**Mangcipu,** Khulekani Thobuxolo (Engineering: Civil)
**Mangoale,** Lesetja Frances (Engineering: Civil)
**Mashita,** Noko Alex (Engineering: Civil)
**Masuku,** Thulile Annita (Engineering: Civil)
**Mathibedi,** Molebogeng (Engineering: Civil)
**Matsha,** Marcus Chuene (Engineering: Civil)
**Mazibuko,** Margret Nonhlanhla (Engineering: Civil)
**Mbatha,** Lindokuhle (Engineering: Civil)
**Mbokazi,** Celiwe Brightness (Engineering: Civil)
**Moraladi,** Lesego Dineo (Engineering: Civil)
**Mothei,** Katlego (Engineering: Civil)
**Mudaka,** Nyikiwa Pretty (Engineering: Civil)
**Mukwevho,** Zwotea (Engineering: Civil)
**Musema,** Andy (Engineering: Civil)
**Mwamba,** Ruddy Kanga (Engineering: Civil)
**Mxhegwana,** Zinzile (Engineering: Civil)
**Naidoo,** Jason (Engineering: Civil)

**Ncube,** Sthandazile Sandra (Engineering: Civil)
**Ngobeni,** Tsakani Prenacia (Engineering: Civil)
**Ngoy,** Cherifine Kilamba (Engineering: Civil)
**Nkadimeng,** Mmakgari Suprise (Engineering: Civil)
**Nobela,** Bassile Adrianah (Engineering: Civil)
**Pholo,** Kelebogile Precious (Engineering: Civil)
**Phooko,** Maile (Engineering: Civil)
**Pilusa,** Barbara Lebogang (Engineering: Civil)
**Rogers,** Mpho Gift Ivan (Engineering: Civil)
**Sebatjana,** Monni Kgabo (Engineering: Civil)
**Sekhukhune,** Thula (Engineering: Civil)
**Seko,** Kwena Desmond (Engineering: Civil)
**Shangisa,** Mzwakhe Isaac (Engineering: Civil)
**Sibanda,** Mduduzi (Engineering: Civil)
**Singh,** Rooksaar Gerelene (Engineering: Civil)
**Thabede,** Lefa Aubrey (Engineering: Civil)
**Thahala,** Rabelani Victor (Engineering: Civil)
**Tlabakoe,** Zanele Julian (Engineering: Civil)
**Tshilombo,** Dieudonne (Engineering: Civil)
**Vilakazi,** Musa Linda (Engineering: Civil)
**Wood,** Steven Grant (Engineering: Civil)
**Zeegers,** Jody Kyle (Engineering: Civil)
**Zwane,** Ntombifuthi Joy (Engineering: Civil)

## 2. Baccalaureus Technologiae (BTech)

**Ajayi,** Oluwagbenga Ebenezer (Engineering: Civil: Structural)
**Ally,** Eid Ris (Engineering: Civil: Structural)
**Alset,** Shirley Daquima (Engineering: Civil: Transportation)
**Balepe,** Minka Joelle (Engineering: Civil: Construction Management) **(with distinction)**
**Beukes,** Armand J (Engineering: Civil: Water)
**Bokwana,** Sikelela (Engineering: Civil: Structural)
**Bugale,** Kinenwa (Engineering: Civil: Transportation)
**Buthelezi,** Sanele Minenhle (Engineering: Civil: Transportation)
**Calitz,** Damian Leigh (Engineering: Civil: Structural)
**Chauke,** Tivani (Engineering: Civil: Transportation)
**Coulter,** Ryan Alan (Engineering: Civil: Structural)
**Cronje,** Francois Johannes (Engineering: Civil: Water)
**Dladla,** Vuyani Sikhumbuzo (Engineering: Civil: Construction Management)
**Engar,** Suhail (Engineering: Civil: Transportation)
**Erasmus,** Natanya (Engineering: Civil: Construction Management)
**Haridwal,** Adhikar (Engineering: Civil: Structural)
**Iver,** Nathin (Engineering: Civil: Water)
**Kalimashe,** Ronald Vumile (Engineering: Civil: Construction Management)
**Kekana,** Elias Duduma (Engineering: Civil: Structural)

**Kgobe,** Cleopas Molato (Engineering: Civil: Water)
**Kgolane,** Phetedi Moses (Engineering: Civil: Construction Management)
**Khan,** Wajahat Abbas (Engineering: Civil: Construction Management) **(with distinction)**
**Kouhawa Noumsi,** Roger Noel (Engineering: Civil: Structural)
**Lesame,** Orapeleng (Engineering: Civil: Transportation)
**Louw,** Juan (Engineering: Civil: Transportation)
**Lumeya,** Kitima Franck (Engineering: Civil: Structural)
**Madari,** Muhammad Saeed (Engineering: Civil: Structural)
**Magongwa,** Kesegofaditsoe Phillip (Engineering: Civil: Structural)
**Mahobe,** Sinazo (Engineering: Civil: Transportation)
**Majola,** Sanele (Engineering: Civil: Structural)
**Makama,** Patrick Nigros (Engineering: Civil: Construction Management)
**Makhado,** Ofhani (Engineering: Civil: Water)
**Malahlela,** Molatelo Terrence (Engineering: Civil: Water)
**Malange,** Tshililo (Engineering: Civil: Transportation)
**Malope,** Lesego Lehlohonolo Lebokgang (Engineering: Civil: Structural)
**Mandlazi,** Lindiwe Thanky (Engineering: Civil: Transportation)
**Maphagela,** Rashaka (Engineering: Civil: Construction Management)
**Masilana,** Musa Lencel (Engineering: Civil: Structural)
**Mathonsi,** Thumba Elgin (Engineering: Civil: Water)
**Mavhalani,** Thinandavha Enos (Engineering: Civil: Construction Management)
**Mbuyu,** Mwamba Jessica (Engineering: Civil: Structural)
**Mekwa,** Gladwell Patrick Sebetlela (Engineering: Civil: Water)
**Metedad,** Zainab (Engineering: Civil: Water)
**Midiburo,** David (Engineering: Civil: Structural)
**Mohlomi,** Moses Lucky (Engineering: Civil: Transportation)
**Mokwana,** Lerato Tercia (Engineering: Civil: Structural)
**Moloele,** Thabang William (Engineering: Civil: Construction Management)
**Motaung,** Ramokabai Alfred (Engineering: Civil: Transportation)
**Mphahlele,** Koketjo Jack (Engineering: Civil: Structural)
**Mthombeni,** Sipho (Engineering: Civil: Transportation)
**Mtshweni,** Walter Mavundla (Engineering: Civil: Construction Management)
**Muvhango,** Ntanganedzeni Doctor (Engineering: Civil: Transportation)
**Ncube,** Mzingaye (Engineering: Civil: Water)
**Ndlovu,** Bridget Nelly (Engineering: Civil: Transportation)
**Ngcamu,** Phelelani Colin (Engineering: Civil: Structural)
**Ngcobo,** Vamumusa Simangaliso (Engineering: Civil: Construction Management)
**Nieuwenhuizen,** Ockert Rudolf (Engineering: Civil: Structural)
**Nkosi,** Gerald Musa (Engineering: Civil: Structural)
**Nkosi,** Simo Brian (Engineering: Civil: Water)
**Ntandane,** Dumisani Bongani (Engineering: Civil: Water)
**Ntshingila,** Lerato Ntombikayise (Engineering: Civil: Structural)
**Petersen,** Cedric Irvin (Engineering: Civil: Transportation)
**Ramahlo,** Dineo Lynnette (Engineering: Civil: Water)
**Rambiyana,** Rofhiwa Ritshidze Israel (Engineering: Civil: Water)
**Rikhotso,** Given Ncayincayi (Engineering: Civil: Construction Management)

**Seekane,** Gabi (Engineering: Civil: Construction Management)
**Sere,** Thabo Daniel (Engineering: Civil: Water)
**Shoke,** Tado (Engineering: Civil: Water)
**Sibiya,** Siyabonga (Engineering: Civil: Structural)
**Sihlangu,** Silalise Polite (Engineering: Civil: Water)
**Soko,** Sibusiso James (Engineering: Civil: Construction Management)
**Sonamzi,** Noyise (Engineering: Civil: Transportation)
**Soqinase,** Andisiwe (Engineering: Civil: Water)

## 3. Doctor Ingeneriae (DIng)

**Abddi Yusuf Ali,** Ahmed Abdi Yusuf (Electrical and Electronic Engineering)
**Thesis:** Various optimisation algorithms adaptation and case study applied on optimal location and sizing of distribution generation systems in electric power grids
**Supervisor:** Prof B Twala
**Co-Supervisor:** Prof T Marwala

**Kuthadi,** Venu Madhav (Electrical and Electronic Engineering)
**Thesis:** An efficient web services framework for approximate data collection in wireless sensor networks
**Supervisor:** Prof T Marwala

**Leke,** Collins Achepsah (Electrical and Electronic Engineering)
**Thesis:** Computational intelligence techniques for high-dimensional missing data estimation
**Supervisor:** Prof T Marwala
**Co-Supervisor:** Prof B Twala

**Selvaraj,** Rajalakshni (Electrical and Electronic Engineering)
**Thesis:** Network security by preventing Distributed Denial of Services attack using a honeypot
**Supervisor:** Prof T Marwala

**Shipman,** William John (Electrical and Electronic Engineering)
**Thesis:** The extraction of quantitative mineralogical parameters from X-ray microtomography data using image processing techniques in three *dimensions*
**Supervisor:** Prof AL Nel

**Madushele,** Nkosinathi (Mechanical Engineering)
**Thesis:** Life cycle assessment of a biogas digester: A case study of a South African system
**Supervisor:** Prof C Mbohwa
**Co-Supervisor:** Prof ET Akinlabi

**Tekweme,** Kunzi (Mechanical Engineering)
**Thesis:** Dynamic modelling, simulation and input-shaped control of planar Two-Link flexible manipulators
**Supervisor:** Prof Al Nel

## 4. Doctor Philosophiae (DPhil)

**Arthur-Aidoo,** Bernard Martin (Engineering Management)
**Thesis:** Integrated growth model for small and medium-size construction firms in Ghana
**Supervisor:** Prof WD Thwala
**Co-Supervisor:** Prof CO Aigbavboa/Prof JHC Pretorius

**Madzivhandila,** Takalani (Engineering Management)
**Thesis:** Waste sand management in South African foundries
**Supervisor:** Prof JHC Pretorius
**Co-Supervisor:** Dr A Wessels

**Ogunyanda,** Kehinde (Electrical and Electronic Engineering)
**Thesis:** Performance ranking and implementation of permutation coded orthogonal frequency division multiplexing for power-line communications **Supervisor:** Prof TG Swart
**Co-Supervisor:** Prof HC Ferreira

**Abddi Yusuf Ali,** Ahmed Abdi Yusuf Abddi **(DIng)**

Ahmed Abdi Yusuf Ali was born in Kuwait. He obtained a BSc Honours in Electrical Engineering from the University of Jordan and a Master of Engineering degree in Power Line Communication from the University of Johannesburg. He is a registered professional in the Kuwait Society of Engineers as well as the Engineering Council of South Africa. Mr Ahmed is currently a lecturer at the University of Johannesburg. He published one paper in an ISI-listed journal, two book chapters and two conferences papers. One further paper was accepted for publication by an ISI-listed journal.

The candidate introduced the development of distribution systems to determine the optimal site and size of new substations and feeders. The goal behind this research is to provide a near optimal solution for the Distributed Generation (DG) to minimise operational costs. This problem was solved using a combination of non-linear and constrained optimisation. He applied different optimisation methods such as genetic algorithms, simulated annealing, hybrid genetic algorithm and variable neighbourhood search. Several experiments were made to the IEEE 34-bus with actual test cases in respect of multiple Distributed Generation units. The main achievement that the candidate made was introducing new techniques of evolutionary computation, which are considered for future investigation due to the results that were obtained.

**Supervisor:** Prof B Twala
**Co-Supervisor:** Prof T Marwala

**Kuthadi,** Venu Madhav **(DIng)**

Venu Madhav Kuthadi obtained his Bachelor's degree in Computer Science and Engineering from Nagarjuna University, India, in 1998. He obtained his Master's degree in Computer Science from JNT University, India in 2001. He completed his PhD in Computer Science at Magadh University, India in 2007. He worked as senior lecturer in the Department of Applied Information Systems at the University of Johannesburg from May 2010 to January 2017. He currently works as senior lecturer in the Department of CS & IS, at the Botswana International University of Science and Technology (BIUST). This work has been presented at three peer-reviewed international conferences and published as two journals articles.

Kuthadi's research involved the investigation of a network's lifetime with the Huffman code, LEACH and Dijkstra algorithm. His work was performed on network security to generate a security pattern to safeguard data transmitted over a network. He introduced an adaptive pre-processing technique using Principal Component Analysis (PCA) and Hyperbolic Hopfield Neural Network (HHNN) to make streaming data efficient. This process provides higher efficiency by increasing the prediction accuracy. The other major problem with the WSN is data collection and scheduling in multiple sink environments. To overcome the problem, the thesis made a notable contribution to TDMA scheduling to pre-empt the delay in data collection and reduce high energy consumption.

**Supervisor:** Prof T Marwala

**Leke,** Collins Achepsah **(DIng)**

Collins Achepsah Leke works as a Machine Learning Consultant at Learning Machines, South Africa. He obtained a BSc in Computer Science and Computational and Applied Mathematics in 2011, and a BSc (Hons) in Computer Science in 2012, both from the University of the Witwatersrand. He obtained an MIng with distinction in Electrical and Electronic Engineering Science from the University of Johannesburg in 2014, after which he enrolled for a DIng degree in the same year. The findings of the candidate's work have been presented at and published in four reputable international conference proceedings.

Collins's research investigated the problem of estimating and imputing missing data entries in high-dimensional datasets with emphasis on image datasets; however, the techniques proposed can easily be extended to other sectors and datasets. Existing techniques in the literature cater for low-dimensional datasets and use narrow artificial intelligence frameworks. He successfully designed six new approaches based on a deep learning framework and swarm intelligence algorithms to impute the missing data, considering the missing at random and missing completely at random mechanisms, as well as the arbitrary pattern. His work differs from any existing research in that it suggests a new direction in the missing data literature by introducing deep learning in conjunction with swarm intelligence algorithms. The approaches he proposed outperformed selected existing methods on a high-dimensional dataset.

**Supervisor:** Prof T Marwala
**Co-Supervisor:** Prof B Twala

**Selvaraj,** Rajalakshmi **(DIng)**

Selvaraj Rajalakshmi is a senior lecturer in the Department of CS & IS, at the Botswana International University of Science and Technology in Botswana. She obtained a Bachelor's degree in Computer Science in 2000 and a Master's degree in Computer Science in 2004, both from Madras University, India. She obtained an MPhil in Computer Science from Periyar University, India in 2007. In 2014, she enrolled for DIng at the Department of Electrical and Electronic Engineering at the University of Johannesburg.

Selvaraj's research involved Firecol Protection Services based on the Honeypot System to protect and handle different system interruptions. She has successfully designed an Outlier Detection Approach based Intrusion Detection System-Honeypot System to identify, avoid, and respond to different sorts of DDoS attacks. She has clearly identified the different system interruptions and suspicious data in the Internet by enhancing intrusion detection and prevention systems to secure the data. Selvaraj's work contributes to the field of network security, which plays a significant role in modern society due to its capability of detecting and preventing attacks from malicious network users.
Two publications in international reputed journal have been produced from this candidate's work. The finding of the study have also been published and presented in three international conferences.

**Supervisor:** Prof T Marwala

**Shipman,** William John **(DIng)**

William Shipman was born on 30 June 1986 and matriculated in 2004 from Allen Glen High School. Thereafter he obtained both a BIng in Electrical and Electronic Engineering with Information Technology (2008) and an MIng in Electrical and Electronic Engineering (2011) from the University of Johannesburg. William was a full-time student for his DIng at the University of Johannesburg from 2012 to 2014 and a part-time student from 2015 to 2017. William presently works at the Council for Mineral Technology (MINTEK) as an engineer.

The research focused on the automation of analysis of 3D micro-tomographic scans of ore samples for the design and optimisation of the recovery of minerals. Tomograms are affected by artefacts that result in errors. The contribution was the automatic segmentation of three-dimensional images into mineral groups despite artefacts. Supervised machine learning with filtering operations were applied to the 3D images and the accuracy was estimated by comparing results to those measurements obtained using a scanning electron microscope. Two different ore samples were tested and found to perform acceptably in estimating the modal abundance. Grain and pore size distributions posed challenges in verifying results but has laid the foundation for use measuring mineralogical properties using similar scans for the South African mining industry.

**Supervisor:** Prof AL Nel

**Madushele,** Nkosinathi **(DIng)**

Nkosinathi Madushele was born in Soweto, South Africa. He received his BIng in Mechanical Engineering (2011) and an MIng in Engineering Management (2014), both from the University of Johannesburg. He started his professional career at Murray and Roberts where he worked as a junior project manager. He is currently a lecturer in the Department of Mechanical Engineering Science at the University of Johannesburg. He is a registered Professional Engineer (Mechanical) with the Engineering Council of South Africa (ECSA).

His research study focused on the development of a Life Cycle Assessment (LCA) database for a domestic biogas digester. The research carried out a gate-to-gate analysis of a biogas digester. The computational structure of life cycle assessment through matrix algebra was conducted with the aid of Matlab software to develop an algorithm that can be employed in the design phase of engineering products, and that assists in identifying potential areas of high environmental impacts, while also encouraging the philosophy of Design for the Environment (DfE). The work provides a structured and methodical approach on how to model manufacturing methods and how to incorporate those into a product system through the use of functional units, unit processes, and environmental impacts in rectangular matrices. The study is significant and opens up the potential for policy makers, industry professionals and academics alike to quantify the environmental impacts of locally produced products.

**Supervisor:** Prof C Mbohwa
**Co-Supervisor:** Prof ET Akinlabi

**Tekweme,** Kunzi **(DIng)**

Francis Kunzi Tekweme was born on 10 February 1965. He obtained his BEng in Mechanical Engineering from the University of Kinshasa, in the Democratic Republic of Congo in 1998. He subsequently pursued a postgraduate MTech degree in Mechanical Engineering Technology at the University of Johannesburg and graduated in 2010. In 2005, he joined the University of Johannesburg as a part-time lecturer and as a full-time lecturer in 2011.

The candidate's research focused on developing more accurate dynamic modelling and residual vibration control of a planar two-link flexible robot. A complete and explicit dynamic model was developed using the assumed mode methods with the exact values of the boundary conditions at the link ends. This improved model was compared to approximate models reported in the literature and resulting changes in accuracy characterised. The proposed model was tested against the response of an experimental two-link flexible robot with unshaped bang-bang control torques. Shaped motor input torques were applied to the model to determine vibration reduction due to the adapted control modes, showing substantial improvements in vibration levels for the planar flexible link robot.

**Supervisor:** Prof AL Nel

**Arthur-Aidoo,** Bernard Martin **(DPhil)**

Bernard Martin Arthur-Aidoo holds an MSc in Project Management from the University of Westminster in the UK. He is currently a lecturer at the Accra Technical University, a member of the Ghana Institute of Construction (GhIOC) and an affiliate member of the American Academy of Project Managers. He enrolled for his doctoral studies at the University of Johannesburg in 2014. The candidate has published 17 peer-reviewed journal and conference articles from his doctoral studies.

In his thesis, the candidate developed a growth model for small- to medium-sized firms in the Ghanaian construction industry. Although SMEs dominate and impact the construction industry in terms of output and employment in Ghana, the growth and survival rate of these firms, due to a shortage in growth strategies, is not reflected. The study established stakeholder involvement and education and training for employees as the main gaps that need to be addressed for the holistic growth of the firms. The candidate used structural equation modelling (SEM) with the use of AMOS software in the analysis of the collated data. The results were validated using confirmatory factor analysis (CFA). The study revealed that the growth of SMEs would be achieved by integrating the following variables: a firm's characteristics, entrepreneurial features, business environment, stakeholder involvement and education and training. The research has methodical, theoretical and practical contributions, which have the potential to significantly contribute to the growth of construction SMEs, the Ghanaian construction industry, its stakeholders and the economy of Ghana.

**Supervisor:** Prof WD Thwala
**Co-supervisor:** Prof CO Aigbavboa/Prof JHC Pretorius

**Madzivhandila,** Takalani **(DPhil)**

Takalani Madzivhandila was born in Nzhelele on 20 December 1985. He obtained the Diploma in Engineering Metallurgy (2008), BTech in Engineering Metallurgy (2009), MTech Engineering Metallurgy (2012) and Diploma in Advanced Business Management (2013) from the University of Johannesburg. Takalani is responsible for mining and minerals beneficiation in Gauteng province.

The main objective of the study was to find an economically useful application of waste foundry sand. The study focused on the management of waste foundry sand in South Africa. Considerable economic as well as environmental benefits can be derived when appropriate industrial waste management is implemented. Because of current administrative necessities, spent foundry sand is thought to be unsafe waste unless it is tried and can then be delisted to general waste. In the thesis, the candidate performed a physical and chemical characterisation of wastes and raw materials in comparison to the legislation to conclude if foundry sand was hazardous or not. The sand from foundries was found to be Type 3 waste, that is, “low hazardous risk”. It was found that foundry greensand waste can be used for the setting of pavers, thereby reducing the cost of purchasing fresh silica sand. The sand is also suitable for making paving blocks.

**Supervisor:** Prof JHC Pretorius
**Co-Supervisor:** Dr A Wessels

**Ogunyanda,** Kehinde (DPhil)

Kehinde Ogunyanda received his BEng in Electrical Engineering from the University of Ilorin, Nigeria. He obtained his MTech in Electrical Engineering from the Cape Peninsula University of Technology, South Africa, and his MSc in Electronics Engineering from the *Ecole Superieure d'Ingenieurs en Electronique et Electrotechnique*, Paris, both in 2013. Kehinde published five international conference papers and two journal papers during his PhD research. In 2014, he won the award for the best paper presenter at the IEEE International Conference on Adaptive Science and Technology.

Sending information over a power line involves a great deal of challenges, because the channel is characterised by attenuation and noise. As such, this research was motivated by the need to design an effective channel permutation coding scheme, coupled with the need to bring robustness and flexibility into the implementation of power line communication systems. Since several permutation codebooks with relatively close optimalities exist, while exhibiting different performances in reality, this research developed a tool that can effectively decide the best of these codebooks, without having to conduct time-consuming error performance simulations. Utilising the inherent advantages of this tool, new optimal permutation codebooks were constructed for various channel conditions, after which a flexible implementation approach was designed, using the universal software radio peripheral. This was then tested over a real 230V AC power line channel.

**Supervisor:** Prof TG Swart
**Co-Supervisor:** Prof HC Ferreira

See the back cover for the words of the National Anthem.