Ronald Graham du Toit

Cape Town, South Africa
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Ronald Graham du Toit is currently a data scientist at a leading FSP in South Africa. Being part of the first data science team within the company, he has been afforded the opportunity to help grow the team from being experimental to a fully operational and cross-functional part of the business.

Ronald completed his Masters degree in Mechanical Engineering at the Centre for Asset Integrity Management (C-AIM) at the University of Pretoria. The published research focused on the use of statistical inference techniques to predict the condition of turbine blades non-invasively. During his Honours year, he was exposed to valuable courses such as Artificial Intelligence, Optimum Design, Advanced Numerical Methods, Vibration Based Condition Monitoring and Finite Element Modelling. These modules demanded, as well as developed, a strong mathematical and statistical background in a wide range of problems, while providing context to the practical application of various Machine Learning models.

Throughout his school and university career Ronald was also selected for a number of leadership roles, including Head of School and Head Mechanical Engineering Representative. As an avid sportsman, Ronald enjoys the outdoors and can be found on the mountain or road, either running or cycling. For relaxation, Ronald disappears behind the waves on a surfboard or attempts to make sweet sounds on his violin.

In short, Ronald is a motivated problem solver, inspired to continually learn while maintaining a balanced lifestyle and making / drinking good coffee.

PERSONAL INFORMATION

LinkedIn Profile
Date of Birth: 04 / 08 / 1992
Identification Number: 9208045020088
Nationality: South African
Languages: English, Afrikaans

EDUCATION

MEng, Master in Mechanical & Aeronautical Engineering (ave. 88%)
University of Pretoria
Research Topic: The use of Blade Tip Timing for the Remaining Useful Life Estimation of Turbine Blades
Areas of Specialisation: Artificial Intelligence, Design, Finite Element Analysis, Signal Processing, Statistical Inference, Vibration-Based Condition Monitoring

BEng Honours, Mechanical & Aeronautical Engineering (ave. 84%)
University of Pretoria
Modules: Advanced Numerical Methods, Artificial Intelligence, Finite Element Modelling (Linear and Non-Linear), Independent Study, Optimum Design, Vibration-Based Condition Monitoring and Signal Processing

BEng, Mechanical & Aeronautical Engineering (ave. 85%)
University of Pretoria
Final Year Design Project: Design of a solar concentrator and thermal energy store for refrigeration applications.
Final Year Research Project: Upper body Adams model for the seated bicep curl exercise for modelling uncertainty quantification.

High-School
Westville Boys' High School (ave. 96%)
Examination Certificate: NSC

EXPERIENCE

Data Scientist January 2018 -
Allan Gray, Cape Town
Tasked to grow the Data Science capability within the business from an experimental team to an active contributor of cross-functional capability. Major projects to date include: document classification and routing of inbound operations, predictive modelling of calls, topic modelling of call commentary, adviser analytics and segmentation, strategic research in the product development and ManCo distribution space, risk analytics. The projects have all had a strong ML and statistical focus.

Data Science Researcher January 2016 - December 2017
C-AIM University of Pretoria, Gauteng
- Conducted turbomachinery condition monitoring research with a strong data science focus and industry application.

Teaching Assistant (Vibrations) February - September 2017
University of Pretoria, Gauteng
- Tutorial sessions, laboratory assistance and marking

Teaching Assistant (Dynamics) February - July 2015
University of Pretoria, Gauteng
- Tutorial sessions and marking.

Design and Research (student vacation work) June - July 2014, January 2015
Delphius CIT, Centurion, Gauteng
- Design of telecommunications infrastructure.
- Participated in research for industrial microwave technology.
- Assisted in implementing an administrative stock-taking system.

Tutoring August 2012 - September 2014
Homework Heroes, Pretoria, Gauteng
- Tutoring of high-school and university students.

Rigging and Drafting (student vacation work) January 2014
Mechanical Department, Lovemore Bros, New Germany, KwaZulu-Natal
- Construction of mechanical rigs and maintenance of 5-ton hydraulic cylinders in the Durban Harbour.
- Drafting, cost-evaluation and -reduction of structural components.

Maintenance and Optimisation (student vacation work) January - February 2013
Hendok Group, Phoenix, KwaZulu-Natal
- Studied a critical mesh construction procedure and suggested ways to optimise the system. This included the automation of the system.
- Maintenance of smaller mesh machines (under supervision).

COMPUTER SKILLS

Languages: Python (Pandas, Tensorflow, Keras, Gensim, SpaCy, NLTK etc.), SQL, Labview, Matlab
Software: Ansys (Basic), MSC (Adams, Marc and Mentat), National Instruments Signal Processing, NvGate Data Acquisition, Perception Data Acquisition, SolidWorks.

PUBLICATIONS

Towards the use of hybrid models for diagnosis and prognosis in turbomachinery health management. Jul 1, 2019, Surveillance, Vishno and AVE conferences, INSA-Lyon, Universit de Lyon

A stochastic hybrid blade tip timing approach for the identification and classification of turbomachine blade damage, Nov 18, 2018, Mechanical Systems and Signal Processing

CONFERENCES / SEMINARS

AfricaCom November 2019
CTICC, Cape Town
- Unlocking business value using data science in financial services

Power Industry Seminar March 2017
University of Pretoria, Gauteng
- Presentation of Masters topic and benefits to the power industry.
- Demonstration of experimental setup.

Measurement by Light Conference November 2016
CSIR, Gauteng
- University of Pretoria representative.

Diagnostics and Overhauls of Thermo-Mechanical Power Equipment October 2016
Katowice, Poland
- Selected as the only student University of Pretoria representative.

Power Industry Mini-Seminar October 2016
Gliwice, Poland
- Selected as the only student University of Pretoria representative.

COMMUNITY SERVICE

Allan Gray Orbis Foundation January 2020 -
Mentor

EXTRA-CURRICULAR ACTIVITIES

Barista Training, 3CI, Pretoria (2017)
Bestmed half-marathon Silver medallist, Pretoria (2015, 2017)
RAID Open-Water Scuba Diving Course (2015)
Bestmed Satellite Classic Road-Cycling Race 60km, 3^{rd} overall (2015)
Bela Bela 5150 Triathlon (2015)
Olienhout Residence 1^{st} Team Rugby, UP (2012 - 2013)
Completed 90km Fish River Canyon hike, Namibia (2012)
Toastmasters Course (2010)
Westville Boys' High Sports Teams: 1^{st} Team Rugby (XV and Sevens), 1^{st} Team Athletics (2010)
Prep and Bridging Task Team (2009-2010)
Enke International Leadership Forum (2009)
Durban City Orchestra (1^{st} violin): *Oklahoma!* Production (2009)
Westville Youth Orchestra (1^{st} violin): Durban Schools (2004-2006)

AWARDS / POSITIONS

UP Masters Merit Bursary (2017)
UP Honours Award / Colours (2016 - 2017)
Park Central Complex Body Corporate Trustee (2017)
Honours Degree Cum Laude, Mechanical Engineering, UP (2016)
UP Honours Merit Bursary (2016)
Centre of Asset Integrity Management Postgraduate Bursary, UP (2016-2017)
Undergraduate Degree Cum Laude, Mechanical Engineering, UP (2015)
Leadership Award, Mechanical Engineering, UP (2015)
Thermoflow subject prize, Mechanical Engineering, UP (2015)
Elected *Head Department Representative*, Mechanical Engineering, UP (2015)
UP Achievement Bursary (2015)
1^{st} in Class, 89% Average, Mechanical Engineering Department, 3^{rd} year, UP (2014)
Elected *Head Department Representative*, Mechanical Engineering, UP (2014)
UP Achievement Bursary (2014)
2^{nd} in Class, 87% Average, Mechanical Engineering Department, 2^{nd} year, UP (2013)
Golden Key International member for academic excellence (2013 - 2015)
Pro Meritas Blazer for all-round excellence, WBHS (2010)
2^{nd} overall position in KZN Province, Matric (2010)
Dux Scholar, WBHS (2010)
Subject prize winner (Afrikaans, English, Geography, Biology), WBHS (2010)
Trust Scholarship, WBHS (2010)
Headmaster's Award, WBHS (2010)
Appointed Head of School, WBHS (2010)
Appointed to the Executive Learners' Representative Council, WBHS (2010)
Appointed to the Learners' Representative Council, WBHS (2008 - 2010)