

## MICHELLE (ROBERTS) HOOGENHOUT, PhD

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michellehoog@gmail.com  
<https://github.com/midnight22>

Cape Town, South Africa  
Cell: +27 82 597 8518

### RELEVANT EXPERIENCE

- OpenUp – Cape Town, South Africa (Freelance data scientist)** 2019 -
- Develop deep learning networks and clustering algorithms to predict racial transformation in entrepreneurship in South Africa from text data
  - Languages/ Technologies used: Keras, TensorFlow, NLTK, Python
- Umuzi Academy– Johannesburg, South Africa (Data science manager, head of tech department)** 2018 -
- Teaching and curriculum development
    - Created data science curriculum, going from 0 to 17 students in a span of 8 months
    - Taught students Python, Machine Learning, and Statistical Analysis via lecture, one-on-one training, and self-published assignments
    - Held workshops on negotiation, public speaking and technical interviews, increasing student placement by 20%
  - Analytics
    - Designed and implemented psychological testing of internal applicants, created ETL pipeline, and obtained actionable insights from data. Decreased screening time by 80%
    - Surveyed and conducted focus groups for UBER to create a part-time training course for driver partners
    - Consulted on data ETL pipeline, analysis, and monitoring and evaluation strategy for Allan Gill Gray Philanthropy
  - Management
    - Responsible for supervising management team of 7 web developers, data scientists and data engineers
    - Served as interim CTO, overseeing managers and initiating company partnerships
  - Languages/ Technologies used: Python (incl. numpy, pandas, sklearn, NLTK), R, MySQL, Linux, Docker, Airflow, Git, Google Data Studio
- Univ. of Cape Town – Cape Town, South Africa (Postdoctoral fellow)** 2017 – 2018
- Researched genetic risk for developmental disorders in collaboration with the Kenya Medical Research Institute (KEMRI), Harvard and the Univ. of Cape Town
  - Management and community engagement
    - Conducted focus groups with community stakeholders
    - Supervised 6 students to completion
    - Chair, Student Training Committee, African Regional International Meeting for Autism Research 2018
  - Analytics
    - Researched psychological test validity and reliability across language and cultural groups and created standardized language versions
    - Used general additive and hierarchical linear models to predict risk factors for poor fetal and infant growth outcomes
    - Conducted genomic quality control and genome wide association studies
  - Languages/ Technologies used: R, Linux, MATLAB, BrainVision Analyzer, E-Prime
- Univ. of Cape Town – Cape Town, South Africa (Contract lecturer)** 2011 – 2018
- Lecturing
    - Taught multivariate statistics & machine learning (regression, classification, boosting, multilevel models, cross-validation), psychometrics, cognition and neuroscience
    - Created textbooks and education materials for Statistics for Evaluation & Research Methods, School of Management Studies, Faculty of Commerce
  - Languages/ Technologies used: R, SPSS

**Cape Town, South Africa (Statistical consultant)** 2010 - 2018  
 Conducted statistical analysis and consulting for research groups incl. the Institute for Mindfulness South Africa

## LANGUAGES

English (Fluent), Afrikaans (Native), German (Elementary), Dutch (Reading Proficiency)

## AWARDS

- Emerging Researcher Award, South African Association of Child and Adolescent Psychiatry and Allied Professions and International Meeting for Autism Research 2017
- Stevens-Shapiro Award, International Association for the Scientific Study of Intellectual and Developmental Disabilities 2016

## EDUCATION

Fellow, Harvard T.H. Chan School of Public Health & Broad Inst. of Harvard and MIT 2017 - 2019  
 PhD Psychology, Univ. of Cape Town 2017  
 MA Psychological Research (Neuropsychology) *Cum Laude*, Univ. of Cape Town 2011  
 BSocSc (Hons) Psychology *Cum Laude*, Univ. of Cape Town 2008  
 BSc Human Life Sciences *Cum Laude*, Stellenbosch Univ. 2007

## RESEARCH

- Characterizing genetic influences on neuro-developmental disorders in African populations
- Psychobiological correlates of empathy in autism
  - Longitudinal and time series data, multilevel modelling, data reduction, structural equation modelling, reproducible research, measurement of physiological signals
- Prediction of risk factors for poor fetal and infant growth outcomes
  - Longitudinal and time series data, multiple imputation of multilevel data, additive modelling

## SELECTED PUBLICATIONS AND CONFERENCE ACTIVITY

### Publications (out of 16)

- **Hoogenhout, M.\***, de Menil, V.\*, Kipkemai, P.\*, ... Newton, C.R., Donald, K.A., & Robinson, E. (2019). The NeuroDev study: Phenotypic and genetic characterization of neurodevelopmental disorders in Kenya and South Africa. *Neuron*, 101, 15 – 19.
- **Hoogenhout, M.** (2018). Displaying data. In C. Tredoux & K. Durrheim (Eds.), *Numbers, Hypotheses and Conclusions: A Course in Statistics for the Social Sciences (3<sup>rd</sup> ed.)*. Cape Town: UCT Press.
- Tredoux, C. & **Hoogenhout, M.** (2018). Repeated measures analysis of variance. In C. Tredoux & K. Durrheim (Eds.), *Numbers, Hypotheses and Conclusions: A Course in Statistics for the Social Sciences (3<sup>rd</sup> ed.)*. Cape Town: UCT Press.
- **Hoogenhout, M.**, & Malcolm-Smith, S. (2014). Theory of mind predicts severity level in autism. *Autism*, 21, 242-252, doi: 10.1177/1362361316636758

### Symposia Organised

- Kaku, S. M., & **Hoogenhout, M.\*** (Chairs). *Strategies for management of children with mental health disorders in low and middle-income countries*. International Association of Child and Adolescent Psychiatry and Allied Professions (Aug 2018), Prague, Czech Republic.
- **Hoogenhout, M.\*** & K. Donald. (Chairs). *The presentation and management of ASD in South Africa: Implications for multicultural and low-income settings*. African Regional International Meeting for Autism Research (Aug 2017), Stellenbosch, South Africa.

### Conferences & Invited Talks (out of 29)

- **Hoogenhout, M.\***. *Growing young talent: Selecting and training the next generation of data scientists*. Deep Learning IndabaX (April 2019), Durban, South Africa.
- **Hoogenhout, M.\***. *Services for the poor need not be poor services: Child mental health interventions in low and*

*middle-income countries*. International Association of Child and Adolescent Psychiatry and Allied Professions (Aug 2018), Prague, Czech Republic

- Donald, K. A., **Hoogenhout, M.\***, Du Plooy, C.P., Wedderburn, C.J., Nhapi, R.T., Barnett, W., Hoffman, N., Malcolm-Smith, S., Zar, H.J., & Stein, D.J. *Investigating determinants of early child development and cognition in the Drakenstein Child Health Study*. International Association of Child and Adolescent Psychiatry and Allied Professions (Aug 2018), Prague, Czech Republic.
- **Hoogenhout, M.** *Heartfelt emotion: The physiology of empathy in autism*. Yale Child Study Center (July 2017), New Haven, USA.