

Curriculum Vitae – Devon Jarvis

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My primary research interest lies in understanding the meso-scale structure of the brain and how these structures function computationally and algorithmically to learn high-level concepts from low-level sensory inputs. Further, I aim to understand how these concepts then afford the brain the ability to systematically generalize and perform context sensitive, controlled semantic cognition.

ACADEMIC REFERENCES

- Professor Benjamin Rosman [email: Benjamin.Rosman1@wits.ac.za] (University of the Witwatersrand)
- Professor Richard Klein [email: richard.klein@wits.ac.za] (University of the Witwatersrand)
- Professor Andrew Saxe [email: a.saxe@ucl.ac.uk] (University College London)

EMPLOYMENT

University of the Witwatersrand February 2019 - present

- Associate Lecturer Computer Science IV, VII (Honours and Masters):
Mathematical Foundations of Data Science (2024); Natural Language Processing (2024)
- Sessional Lecturer Computer Science IV, VII (Honours and Masters):
Mathematical Foundations of Data Science (2022, 2023); Natural Language Processing (2023)
- Course Developer in School of Family Medicine and Primary Care:
Introduction to Health Analytics IV (2022), Health Analytics IV (2022)
- Head Tutor Computer Science IV:
Computer Vision (2020), Mathematical Foundations of Data Science (2021),
Natural Language Processing (2021)
- Head Tutor Computer Science III:
Machine Learning, Computer Graphics and Visualization (2020)
- Academic Tutor for Computer Science II and Computer Science III (2019)

PUBLICATIONS

Beukman, Michael et al. (2023). “Dynamics Generalisation in Reinforcement Learning via Adaptive Context-Aware Policies”. In: *Thirty-seventh Conference on Neural Information Processing Systems*.

Jarvis, Devon et al. (2023). “On The Specialization of Neural Modules”. In: *The Eleventh International Conference on Learning Representations*.

Tasse, Geraud Nangue et al. (2024). “Skill Machines: Temporal Logic Skill Composition in Reinforcement Learning”. In: *The Twelfth International Conference on Learning Representations*.

PREPRINTS, WORKSHOP PAPERS AND EXTENDED ABSTRACTS

Love, Tamlin et al. (2022). “Facilitating Safe Sim-to-Real through Simulator Abstraction and Zero-shot Task Composition”. In: *IROS Workshop on Lifelong Robotics*.

Jarvis, Devon et al. (2023). “Revisiting the Role of Relearning in Semantic Dementia”. In: *The Conference on Cognitive Computational Neuroscience*.

Michlo, Nathan et al. (2023). “Accounting for the Sequential Nature of States to Learn Features for Reinforcement Learning”. In: *arXiv preprint arXiv:2205.06000*.

Domine, Clementine CJ et al. (2024). “NeuralPlayground: A Standardised Environment for Evaluating Models of Hippocampus and Entorhinal Cortex”. In: *bioRxiv*, pp. 2024–03.

ACADEMIC SERVICE

Conference Reviewer

- International Conference on Learning Representations (2024)
- Computational Cognitive Neuroscience Society Meeting (2023)
- International Conference on Machine Learning (2023)
- Conference on Neural Information Processing Systems (2022) [Top Reviewer Award]

Workshop Reviewer

- ICLR 2024 Re-Align Workshop
- NeurIPS (2023) Workshop of Unifying Representations (UniReps) [Also Volunteer]

SUPERVISED STUDENTS

Master of Science by Dissertation

- Dynamics Generalisation in Reinforcement Learning Through the use of Adaptive Policies (2022-2023) [obtained with Distinction]

EDUCATION

University of the Witwatersrand

February 2016 - present

- Doctor of Philosophy Candidate (2022-Present)
 - Supervisors: Prof. Richard Klein, Prof. Benjamin Rosman, Prof. Andrew Saxe
 - Proposed Thesis: A Gated Hub-and-Spoke Model of Controlled Semantic Cognition
- Master of Science (Dissertation) in the field of Computer Science (2020-2021) [with Distinction]
 - Supervisors: Prof. Richard Klein, Prof. Benjamin Rosman, Prof. Andrew Saxe
 - Thesis: [Generalizing Regularization of Neural Networks to Correlated Parameter Spaces](#).
- Bachelor of Science with Honours in the field of Computer Science (2019) [with Distinction]
- Bachelor of Science in Computer Science and Economic Science (2016-2018) [with Distinction]

University College London

January 2023 - January 2024

- Visiting Researcher at the Gatsby Computational Neuroscience Unit and Sainsbury Wellcome Centre

Additinal Certifications, Summer Schools and Educational Conferences

- Computational Cognitive Neuroscience Society Meeting (August 2023)
- Royal Society of Biology PIL A and PIL B Certification (Mouse and Rat) (March 2023)
- IBRO-Simons Computational Neuroscience Imbizo (August 2022)
- Deep Learning IndabaX South Africa (August 2021)
- Oxford Machine Learning Summer School (July 2020)
- International Symposium on Artificial Intelligence and Brain Science (June 2020)
- Deep Learning Indaba (September 2018, September 2019)

HONOURS AND AWARDS

General Academic

- Commonwealth Scholarship (October 2022)
- Top Reviewer Award at the Conference on Neural Information Processing Systems (August 2022)
- Google PhD Fellowship (June 2022)

University of the Witwatersrand

- PSYBERGATE Computer Science Alumni Prize for the Best Student Tutor (2020):
Awarded annually to the Honours or Postgraduate student who makes the biggest contribution to supporting teaching in the School through their tutoring of undergraduate students.
- The Samuel Goodman Memorial Medal (2019):
This gold medal is awarded annually to the most distinguished Honours graduate in the Faculty of Science (Top Honours student in Science Faculty).
- PSYBERGATE Computer Science III Prize (2018):
Awarded for excellence in the final year of study in Computer Science (Summa Cum Laude in Computer Science III).
- Dean's List (2016, 2017, 2018, 2019)

VOLUNTEER WORK

1Day Sooner

August 2020 - present

- 1Day Africa Research Lead (January 2021 - Present)
- Volunteer Organiser (August 2020 - January 2021)

OPINION EDITORIALS

Daily Maverick (South Africa)

- [African countries need to be involved in Covid-19 human challenge vaccine trials](#)

PUBLIC TALKS AND ENGAGEMENT

South African Broadcasting Commission (SABC) News

- [“It’s Topical”: Panelist discussion the role of AI in fake new \(January 2024\)](#)