Jacob Neumann

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jacobneu.github.io

Education

2021 – present
Ph.D. Computer Science (in-progress)
University of Nottingham, School of Computer Science, Functional Programming Lab
(Tentative) Thesis title: *Directed Higher Observational Type Theory*
Supervisor: Thorsten Altenkirch

2019 – 2020
M.Sc. Logic, Computation and Methodology
Carnegie Mellon University, Department of Philosophy
Thesis title: *Semantics of Nondeterministic Construction*
Supervisor: Adam Bjorndahl

2015 – 2019
B.Sc. Discrete Mathematics and Logic
Carnegie Mellon University, Department of Mathematics
Additional Major: Logic and Computation (Dept. of Philosophy)
Mellon College of Science Honors

Employment

2021 – present
Tutor (teaching assistant), University of Nottingham, School of Computer Science
Modules supported:

- *Introduction to Formal Reasoning* (lecturer: Thorsten Altenkirch): Second-year undergraduate module covering the basics of interactive theorem proving in Lean
- *Programming Paradigms* (lecturer: Graham Hutton): First-year undergraduate module on elementary functional programming in Haskell
- *Languages and Computation* (lecturer: Thorsten Altenkirch): Second-year undergraduate module on automata and computability theory, with optional content on Lean formalization

2020, 2021
Visiting Lecturer, Carnegie Mellon University, School of Computer Science
Course: *Principles of Functional Programming*
Co-instructor (2020): Dilsun Kaynar
Delivered 21 lectures (2020) and 32 lectures (2021), covering introductory functional programming in Standard ML; oversaw delivery and grading of homework assignments; interviewed, selected, and managed course staffs of 23 teaching assistants (2020) and 15 teaching assistants (2021)
Number of students: approx. 110 (2020), approx. 80 (2021)

Employment (continued)

2019 – 2021 **Teaching Assistant,** Carnegie Mellon University, Department of Philosophy
Courses supported:

- *Category Theory* (lecturer: Mathieu Anel). Delivered two supplemental lectures, on Categorical Semantics of the Simply-Typed Lambda Calculs, and Algebraic Theories
- *Modal Logic* (lecturer: Adam Bjorndahl)
- *Formal Logic* (lecturer: Adam Bjorndahl)
- *Kant* (lecturer: Kevin Kelly)
- *Introduction to Philosophy* (lecturer: Simon Cullen). Delivered lecture on the Turing Test.

Grants and Awards

June 2024 Short-Term Scientific Mission, EU COST Action CA20111
(Upcoming)

Professional Service

Subreviewer, FSCD 2024

Contributed Talks

04 Apr 2024 **Towards Modal SOGATs**
EuroProofNet Working Group 6 Meeting
Leuven, Belgium

03 Apr 2024 **A Sampling of Synthetic 1-Category Theory**
Workshop on Homotopy Type Theory/Univalent Foundations
Leuven, Belgium

28 Oct 2023 **Paranatural Category Theory**
Category Theory Octoberfest 2023
online

12 Jun 2023 **Categorical Logic in Lean**
29th International Conference on Types for Proof and Programs (TYPES 2023)
Valencia, Spain

24 May 2023 **Presheaf Models of Polarized Higher-Order Abstract Syntax**
Second International Conference on Homotopy Type Theory
Pittsburgh, USA

Contributed Talks (continued)

23 Apr 2023 **The Category Interpretation of (Polarized and Directed) Type Theory**
Workshop on Homotopy Type Theory/Univalent Foundations
Vienna, Austria

01 Dec 2022 **(Co)ends and (Co)structure**
HoTT Electronic Seminar Talks (HoTTEST)
online

01 Aug 2023 **Towards Directed Higher Observational Type Theory**
Workshop on Homotopy Type Theory/Univalent Foundations
Haifa, Israel

Skills

Natural Languages	English (native), Spanish (B2)
Theorem Proving	Lean (advanced), Agda (intermediate), Cubical Agda (basic)
Programming	Standard ML (advanced), Haskell (intermediate), Python (intermediate), Bash (intermediate), JavaScript (intermediate)
Display	HTML, CSS, LaTeX
Misc.	git, Github, Inkscape, DaVinci Resolve, Stable Diffusion