Long Pham

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EDUCATION

Ph.D. in Computer Science
Carnegie Mellon University (2019-Present)
- Advised by Prof. Jan Hoffmann and collaborating with Prof. Feras Saad, I investigate the integration of static and statistical program analyses to infer resource bounds of programs.
- Research interests: type theory, resource analysis of programs, probabilistic programming

M.Sc. in Computer Science (First Class)
University of Oxford (2018-19)
- Master's thesis: *Optimal Loss Functions for Distributionally Robust Optimization of Neural Networks* under the supervision of Prof. Marta Kwiatkowska and Dr. Wenjie Ruan.

B.A in Computer Science (First Class)
University of Oxford (2015-18)
- Bachelor's thesis: *Defunctionalization of Higher-Order Constrained Horn Clauses* under the supervision of Prof. Luke Ong and Dr. Steven Ramsay.

SKILLS

Programming Languages (past 5 years)
Proficient (10000+ LOC):
OCaml, Python

Familiar (1000+ LOC):
C++, Julia, R

Domain-Specific Languages
Stan (for Bayesian statistics)
LaTex (for typesetting documents)

Technical Tools
Git, Docker, AWS Lightsail, Linux

Natural Languages
Native: Japanese
Proficient: English (TOEFL 115/120)

INDUSTRIAL EXPERIENCE

Research internship at **Amazon Web Services (AWS)** Automated Reasoning Group (ARG)
(Boston, USA, 2021 June-August)
- Extended the C Bounded Model Checker (CBMC) with loop variants for proving termination of loops.
- Implemented a loop-variant inference engine based on abstract interpretation.
- Received a return offer for a research internship in the following year.

Research internship at **Mitsubishi Electric** Information Technology R&D Center
(Kanagawa, Japan, 2018 July-August)
- Implemented recurrent neural networks for anomaly detection in factories using Python and Chainer.
- Found and fixed a critical bug in the legacy code of the research group.
- Analyzed and evaluated the performance of recurrent neural networks with various architectures.

Software engineering internship at **Bibliotech** (London, UK, 2017 December)
- Processed data of service subscribers on the Dataiku platform using Python and SQL.
- Enhanced the web accessibility of the company's website, making the website compatible with screen readers.

PUBLICATIONS

Long Pham, Di Wang, Feras Saad, and Jan Hoffmann. Programmable MCMC with Soundly Composed Guide Programs. Accepted at Object-oriented Programming, Systems, Languages, and Applications (OOPSLA), 2024.

Long Pham, Feras Saad, and Jan Hoffmann. 2024. Robust Resource Bounds with Static Analysis and Bayesian Inference. Proc. ACM Program. Lang. 8, PLDI, Article 150 (June 2024), 26 pages. https://doi.org/10.1145/3656380.

Long Pham and Jan Hoffmann. Worst-Case Input Generation of Concurrent Programs Under Non-Monotone Resource Metrics. Conditionally accepted at Logical Methods in Computer Science (LMCS), 2024. arXiv, https://arxiv.org/abs/2309.01261.

Long Pham and Jan Hoffmann. Typable Fragments of Polynomial Automatic Amortized Resource Analysis. In 29th EACSL Annual Conference on Computer Science Logic (CSL 2021). Leibniz International Proceedings in Informatics (LIPIcs), Volume 183, pp. 34:1-34:19, Schloss Dagstuhl – Leibniz-Zentrum für Informatik (2021). https://doi.org/10.4230/LIPIcs.CSL.2021.34

SCHOLARSHIP AND ACADEMIC AWARDS

2019   Overseas PhD scholarship by the Funai Foundation in Japan

2018   Highest overall score in the third year of Computer Science

2018   G-Research Prize
        - For the best Part B project. The project is titled *Defunctionalization of Higher-Order Constrained Horn Clauses* and was undertaken under the supervision of Prof. Luke Ong and Dr. Steven Ramsay.

2017   Deidre Tucker Memorial Prize
        - For the best presentation and essay on mathematics or computer science at Keble College.

2016   Gibbs Prize
        - In recognition of the outstanding achievement in the first public examinations at Oxford.

2016   College Prize
        - For obtaining first place at Keble College in the first public examinations for computer science.