Christopher Steven Timperley

Systems Scientist at Institute for Software Research
School of Computer Science, Carnegie Mellon University

April 18, 2019
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Research Experience

- **Carnegie Mellon University** — Pittsburgh, PA, USA
  Systems Scientist — *August, 2018 – present*
- **Carnegie Mellon University** — Pittsburgh, PA, USA
  Postdoctoral Researcher — *October, 2016 – August, 2018*
- **Carnegie Mellon University** — Pittsburgh, PA, USA
  Visiting Research Student — *July, 2015 – October, 2015*

Education

- **University of York, UK** — 2013–2017
  Ph.D. Computer Science
  Advisor: Susan Stepney
  Thesis: Advanced methods for search-based program repair
- **University of York, UK** — 2009–2013
  M.Eng. Computer Science with Artificial Intelligence — *First Class Honours*
  Advisor: Susan Stepney
  Thesis: Reflective method matching for object-oriented programs

Industry Experience

- **Analytica Informatics** — London, UK
  Co-Founder, Technical Director — *February, 2012 – August, 2013*
- **Academic Support Office, University of York** — York, UK
  Summer Intern — *July, 2010 – October, 2010*
- **The Guild of Dark Knights (TGODK.com)** — Heysham, UK
  Founder — *April, 2004 – February, 2007*

Awards, Grants & Honors

EPSRC Doctoral Training Grant 2013–2016
William Gibbs Award (£3,000) 2015
K.M. Stott Prize for Best Qualifying Disseration (£250) 2015
British Informatics Olympiad (Merit) 2009
MCHS ICT Student of the Year 2007–2009
MCHS Crowther Prize for Progress 2008
MCHS Commitment to Study Prize 2007

Publications

[1] Afsoon Afzal and Jeremy Lacomis and Claire Le Goues and Christopher S. Timperley. "A Turing Test for Genetic Improvement". In: *International Workshop on Genetic Improvement*. GI '18. 2018.

[2] Benoit Baudry and Nicholas Harrand and Eric Schulte and Chris Timperley and Shin Hwei Tan and Marija Selkavoic and Emamurho Ugherughe. "A spoonful of DevOps helps the GI go down". In: *International Workshop on Genetic Improvement*. GI '18. 2018.

[3] Christopher Steven Timperley and Afsoon Afzal and Deborah S. Katz and Jam Marcos Hernandez and Claire Le Goues. "Crashing simulated planes is cheap: Can simulation detect robotics bugs early?" In: *International Conference on Software Testing*. ICST '18. 2018.

[4] Christopher Steven Timperley and Susan Stepney and Claire Le Goues. "Poster: BugZoo – A Platform for Studying Software Bugs". In: *International Conference on Software Engineering*. ICSE '18. 2018.

[5] Christopher Steven Timperley. "Advanced Methods for Search-Based Program Repair". PhD thesis. York, England: University of York, 2017.

[6] Christopher Steven Timperley, Susan Stepney, and Claire Le Goues. "An Investigation into the Use of Mutation Analysis for Automated Program Repair". In: *Search Based Software Engineering*. SSBSE '17. 2017, pp. 99–114.

[7] Tim Taylor et al. "Open-Ended Evolution: Perspectives from the OEE Workshop in York". In: *Artificial Life* 22.3 (2016), pp. 408–423.

[8] Christopher Steven Timperley and Susan Stepney. "Wallace: An efficient generic evolutionary framework". In: *European Conference on Artificial Life*. ECAL '15. 2015, pp. 365–372.

[9] Christopher Steven Timperley and Susan Stepney. "Reflective Grammatical Evolution". In: *ALife XIV*. MIT Press. 2014, pp. 71–78.

[10] Christopher Steven Timperley. "Reflective Method Matching for Object-Oriented Programs". MEng thesis. York, England: University of York, 2013.

Teaching and Demonstrating

- **17355: Program Analysis** — Spring 2019
  Guest Lecturer — *Carnegie Mellon University*
  17413: Software Engineering Practicum — Spring 2019
  Co-Instructor — *Carnegie Mellon University*
- **SMAT: Software Measurement and Testing** — Spring 2016
  Demonstrator, Guest Lecturer — *University of York*
- **EVCO: Evolutionary Computation** — Autumn 2014
  Demonstrator, Guest Lecturer — *University of York*
- **CIDCATS: Introduction to Complex Systems** — Autumn 2014
  Demonstrator — *University of York*
- **TPOP: Theory and Practice of Programming** — 2014, 2015
  Demonstrator — *University of York*

Selected Open Source Projects

- **BugZoo:** `https://github.com/squaresLab/BugZoo` Python, Docker
  An open platform for studying and reproducing historical software bugs.
- **ROBUST:** `https://github.com/robust-rosin/robust` BugZoo
  A curation of over 200 historical bugs in Robot Operating System packages.
- **Rooibos:** `https://github.com/squaresLab/Rooibos` OCaml
  A language-independent, balanced-delimiter-aware syntax rewriter.
- **Darjeeling:** `https://github.com/squaresLab/ChrisTimperley` Python, C++
  A language-agnostic search-based program repair tool.

Invited Talks

- **Crashing simulated planes is cheap: Can simulation detect robotics bugs early?** Swedish Association for Software Testing Quarterly Meeting Q2, *Västerås, Sweden, Apr 2018.*
- **Automated Program Repair: Opportunities, Challenges, Advances.** 58th CREST Open Workshop, Automating Programmers Programming Experiments for Analytic Result Reporting in Code Review and Continuous Integration, *London, England, Feb 2018.*
- **BugZoo: A Platform for Studying Historical Bugs.** Dagstuhl Seminar 18052, Genetic Improvement of Software, *Wadern, Germany, Jan 2018.*

Professional Service

- **Program Committee Member:**
  - International Conference on Automated Software Engineering (ASE), Tools Track, 2019.
  - International Workshop on the Repair and Optimisation of Software using Computational Search (GI@ICSE), 2019.
  - International Conference on Software Engineering (ICSE), Demo Track, 2019.
  - International Symposium on Search-Based Software Engineering (SSBSE), Student and Short Papers Track, 2017.
  - Complex Systems Modelling and Simulation Workshop, (COSMOS), 2017.
  - York Doctoral Symposium (YDS), 2014.
- **Subreviewer:**
  - International Conference on Automated Software Engineering (ASE), 2018.
  - International Symposium on the Foundations of Software Engineering (FSE), 2017.
  - Artifical Life Journal, 2015.
  - European Conference on Artificial Life (ECAL), 2015.
  - International Conference on Unconventional Computation and Natural Computation (UCNC), 2014.

- **Organising Committee:** York Doctoral Symposium (YDS), 2014, York.
- **Student Volunteer:** European Conference on Artificial Life (ECAL), 2015, York.
- **Admissions Committee:** Research Experience for Undergraduates (REU), Carnegie Mellon University, 2017.

Referees

- **Prof. Claire Le Goues**, School of Computer Science, Carnegie Mellon University. clegoues@cs.cmu.edu
- **Prof. Susan Stepney**, Department of Computer Science, University of York. susan.stepney@york.ac.uk
- **Dr. Daniel Franks**, Departments of Biology and Computer Science, University of York. daniel.franks@york.ac.uk