

# Werner M. Dietl

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## Student Project Supervision

### Projects at the University of Waterloo

#### Current Students

- [UWatC1] Negar Sabour. Mobile Security (TBD). MASc student (ongoing); co-supervised with Mahesh V. Tripunitara. January 2022.
- [UWatC2] Alex Liu. Pluggable Type Systems (TBD). MASc student (ongoing). January 2022.
- [UWatC3] Haifeng Shi. Pluggable Type Systems (TBD). MASc student (ongoing). January 2022.
- [UWatC4] Piyush Jha. Pluggable Type Systems (TBD). MASc student (ongoing). May 2021.
- [UWatC5] Zhiping Cai. Pluggable Type Systems (TBD). MASc student (ongoing); previously Winter 2020 URA student working on Checker Framework Inference Improvements (January to April 2020). May 2021.
- [UWatC6] Florian Lanzinger. Property Type Systems. Visiting PhD student (ongoing); PhD student at KIT, supervised by Matthias Ulbrich; previously MASc student, co-advised with Matthias Ulbrich, KIT (May 2020 to February 2021). May 2020.
- [UWatC7] Mark S. Dittmer. Object Capability Systems (TBD). PhD student (ongoing); co-supervised with Mahesh V. Tripunitara. January 2021.
- [UWatC8] Yuyan Bao. Type systems for Program Verification. Post-Doctoral researcher (ongoing); co-supervised with Arie Gurfinkel. January 2021.

#### Graduate Students

- [UWatM1] Di Wang. Interval Type Inference: Improvements and Evaluations. MASc student (started May 2020). December 2021.
- [UWatM2] Lian Sun. An Immutability Type System for Classes and Objects: Improvements, Experiments, and Comparisons. MASc student (started September 2019). Previously MEng student assistant in Spring 2019. April 2021.
- [UWatM3] Weitian Xing. Light-weight verification of cryptographic API usage. MASc student (started May 2019). Previously MEng student assistant in Winter 2019. December 2020.
- [UWatM4] Puneet Gill. Least-Privilege Identity-Based Policies for Lambda Functions in Amazon Web Services (AWS). MASc student (started January 2019); co-supervised with Mahesh V. Tripunitara. December 2020.
- [UWatM5] Jenny (Tongtong) Xiang. Type Checking and Whole-program Inference for Value Range Analysis. MASc student (started May 2018). Spring 2019: Internship at Amazon Web Services in Seattle, USA. October 2020.
- [UWatM6] Daniel Gerald Caccamo. GoA — Actors with Locally Managed Memory for Go. MASc student (started September 2016). Spring 2017: Internship at Amazon, Seattle, USA. Now at IBM, Ottawa, Canada. December 2018.
- [UWatM7] Charles Zhuo Chen. Pluggable Properties for Program Understanding: Ontic Type Checking and Inference. MASc student (started January 2016). Winter 2017: Internship at Amazon, Toronto, Canada. Now a full-time employee there. April 2018.

- [UWatM8] Mier Ta. Context Sensitive Typechecking And Inference: Ownership And Immutability. MASc student (started January 2016). Winter 2017: Internship at Amazon, Vancouver, Canada. Now a full-time employee at Amazon, Toronto, Canada. April 2018.
- [UWatM9] Sadaf Tajik. Pluggable Type Systems. MASc student (started September 2017, not finished). April 2018.
- [UWatM10] Jason Jianchu Li. A General Pluggable Type Inference Framework and its use for Data-flow Analysis. MASc student (started May 2015). Spring 2016: Internship at Blackberry, Waterloo, Canada. Now at Amazon, Vancouver, Canada. April 2017.
- [UWatM11] Yameng Li. Pluggable Type Systems. MEng student volunteer (started May 2016). July 2016.
- [UWatM12] Dan Brotherston. Gradual Pluggable Typing in Java. MMath student (started May 2014); co-supervised with Ondřej Lhoták. Now at TL Innovation Lab, Waterloo, Canada. April 2016.
- [UWatM13] Nahid Juma. Complexity Analysis of Tunable Static Inference For Generic Universe Types. MASc student (started July 2014); co-supervised with Mahesh V. Tripunitara. August 2015.

### Undergraduate Students

Undergraduate Student Research Award (USRA) and Undergraduate Research Internship (URI) undergraduates work full-time for a term on a research project. Undergraduate Research Assistantship (URA) undergraduates work about 6-8 hours/week for a term on a research project.

- [UWatU1] Kaihang Jiang. Website generation tool. Spring 2022 URA student (started May 2022). August 2022.
- [UWatU2] Javier Rodriguez. Test case generation tool. Spring 2022 URA student (started May 2022). August 2022.
- [UWatU3] Yumeng Chen. Preprocessing for multi-release JAR files. Winter 2022 URA student (started January 2022). April 2022.
- [UWatU4] Jing Liu. Multi-release JAR files for compiler plug-ins. Fall 2021 URA student (started September 2021). December 2021.
- [UWatU5] Evette Madeline Chan-Lee. VSCode Annotated Type Visualization. Spring 2021 URA student (started May 2021). August 2021.
- [UWatU6] Andrew Guo. Benchmarking and Improving Value Inference. Spring 2021 URA student (started May 2021). August 2021.
- [UWatU7] Jainish Mehta. Live Demo Website Improvements. Winter 2021 URA student (started January 2021). April 2021.
- [UWatU8] Willa Kong. Type Inference Live Demo Website. Winter 2021 URA student (started January 2021). April 2021.
- [UWatU9] Frank Ding. Type Inference Benchmarks. Fall 2020 URA student (started September 2020). December 2020.
- [UWatU10] Leo Liu. Improving Viewpoint Adaptation Test Coverage. Spring 2020 URA student (started May 2020). August 2020.

- [UWatU11] Shiji Liu. Checker Framework IDE Integration. Spring 2020 URA student (started May 2020). August 2020.
- [UWatU12] Hejia Wang. Checker Framework Eclipse Integration. Winter 2020 URA student (started January 2020). April 2020.
- [UWatU13] Yuanhui Cheng. Correct Usage of Cryptographic APIs. Winter 2020 URA student (started January 2020). April 2020.
- [UWatU14] Ahmad Tahir Chaudhry. Checker Framework Live Demo Website Improvements. Winter 2020 student volunteer (started January 2020). April 2020.
- [UWatU15] Michael Xiheng Jiang. Checker Framework Eclipse Integration. Fall 2019 URA student (started September 2019). December 2019.
- [UWatU16] Nhat Nguyen. Performance of Static Analysis Systems. Fall 2019 CS 499R student (started September 2019). December 2019.
- [UWatU17] Baorui Zhou. Pluggable Type System Formalizations. Winter 2019 URI student, Fall 2018 URA student, Spring 2018 URI student. April 2019.
- [UWatU18] Jerry Huang. Checker Framework Inference Web Demo. Fall 2018 URA student (started September 2018). December 2018.
- [UWatU19] Sunjay Varma. Gauss-Jordan Constraint Solver. Fall 2018 URA student (started September 2018). December 2018.
- [UWatU20] Yiren Zhou. Checker Framework Atom Integration. Fall 2018 URA student (started September 2018). December 2018.
- [UWatU21] Adam Yifan Yang. Checker Framework LSP Integration. Spring 2018 URA student (started May 2018). August 2018.
- [UWatU22] Amanda Yuxin Jiang. Checker Framework VSCode Integration. Winter 2018 URA student (started January 2018). April 2018.
- [UWatU23] Haaris Ahmed. Checker Framework IDE Integration. Fall 2017 URA student (started September 2017). December 2017.
- [UWatU24] Boying (Ashley) Liu. Checker Framework Live Demo Improvements. Spring 2017 URA student (started May 2017). August 2017.
- [UWatU25] Vic Hao-Chien Lin. Benchmark infrastructure and Web Interface. Spring 2017 USRA student (started May 2017). August 2017.
- [UWatU26] Andy Chang Ho Lee. Investigate a new Pluggable Type System. Fall 2016 URA student (started September 2016). December 2016.
- [UWatU27] Fernando Peña. Checker Framework Rise4Fun Integration. Fall 2016 URA student (started September 2016). December 2016.
- [UWatU28] Luqman Aden. Checker Framework Inference Improvements. Fall 2016 USRA student (started September 2016). Now at Microsoft, Redmond, USA. December 2016.
- [UWatU29] Matthew D'Souza. Checker Framework Java 9 Update. Fall 2016 URA student (started September 2016). December 2016.
- [UWatU30] Steven Jia. Checker Framework IntelliJ Integration. Fall 2016 URA student (started September 2016). December 2016.

- [UWatU31] Thomas Feng. Checker Framework Performance Improvements. Fall 2016 student volunteer (started September 2016). December 2016.
- [UWatU32] Tony Rong Tan Wang. Checker Framework NetBeans Integration. Fall 2016 URA student (started September 2016). December 2016.
- [UWatU33] Shruti Dembla. Checker Framework Performance Profiling. Winter 2016 URA student (started January 2016). May 2016.

### **Other Student Projects**

- [UWatO1] Fady Abousifein. Project documentation and improvements. Spring 2022 high school volunteer (started May 2022). August 2022.
- [UWatO2] Seung Whan (Peter) Song. Project documentation and improvements. Fall 2021/Winter 2022 high school volunteer (started September 2021). June 2022.
- [UWatO3] Aditya Singh. General Tainting Checker. Spring 2020 GSoC student (started May 2020). Google Summer of Code (GSoC) is a competitive intern funding program from Google. Dr. Dietl is one of the GSoC organizers for the Checker Framework project and is the GSoC advisor for Mr. Singh. September 2020.
- [UWatO4] Jiangqi Zhang. Checker Framework LSP Server. ECE 699 and MEng student assistant (started January 2019). December 2019.
- [UWatO5] Jeff Luo. Pluggable Type Systems. PhD student (started July 2014, incomplete). Spring 2016 and Spring 2017: Internships at Google, Waterloo, Canada. Mr. Luo was awarded scholarships, including two Queen Elizabeth II Graduate Scholarships in Science & Technology, and awards for his excellent teaching efforts. On leave January to December 2019, terminated PhD program in December 2019. Now at Google. December 2019.
- [UWatO6] Ayush Agarwal. Android Support Annotations. Spring 2019 GSoC student (started April 2019). Google Summer of Code (GSoC) is a competitive intern funding program from Google. Dr. Dietl is one of the GSoC organizers for the Checker Framework project and was the GSoC advisor for Mr. Agarwal. August 2019.
- [UWatO7] Ravi Roshan. Checker Framework Java 9 support. Spring 2018 GSoC student (started April 2018). Google Summer of Code (GSoC) is a competitive intern funding program from Google. Dr. Dietl is one of the GSoC organizers for the Checker Framework project and was the GSoC advisor for Mr. Roshan. August 2018.
- [UWatO8] Shinya Yoshida. Control Flow Graph Enhancements. Spring 2017 GSoC student (started April 2017). Google Summer of Code (GSoC) is a competitive intern funding program from Google. Dr. Dietl is one of the GSoC organizers for the Checker Framework project and was the GSoC advisor for Mr. Yoshida. August 2017.

### **External PhD Thesis Reader**

1. Paley Li, March 2015, Victoria University of Wellington

### **PhD Defense Committee Member**

1. Parsa Pourali, January 2020, ECE, University of Waterloo
2. Marianna Rapoport, November 2019, CS, University of Waterloo

3. Aaron Moss, April 2019, CS, University of Waterloo
4. Jonathan Eyolfson, April 2018, ECE, University of Waterloo
5. Pansy Arafa, May 2017, ECE, University of Waterloo
6. Karim Ali, September 2014, CS, University of Waterloo

### **PhD Comprehensive Exam Committee Member**

1. Yiwen Dong, December 2021, CS, University of Waterloo
2. Parsa Pourali, April 2017, ECE, University of Waterloo
3. Pansy Arafa, June 2015, ECE, University of Waterloo
4. Jean-Christophe Petkovich, July 2014, ECE, University of Waterloo
5. Jonathan Rodriguez, July 2014, CS, University of Waterloo
6. Jonathan Eyolfson, May 2014, ECE, University of Waterloo

### **PhD Background Exam Committee Member**

1. Yusen Su, August 2021, ECE, University of Waterloo
2. Hari Govind Vediramana Krishnan, August 2020, ECE, University of Waterloo

### **Master Thesis Reader**

1. Tejvinder Singh Toor, January 2022, MASc, ECE, University of Waterloo
2. Rahul Punchhi, August 2021, MASc, ECE, University of Waterloo
3. Yangtian Zi, August 2021, MMath, CS, University of Waterloo
4. Siddharth Priya, August 2021, MASc, ECE, University of Waterloo
5. Boyun Zhang, December 2020, MASc, ECE, University of Waterloo
6. Jakub Kuderski, August 2019, MASc, ECE, University of Waterloo
7. Alex Norton, August 2019, MMath, CS, University of Waterloo
8. Ming-Ho Yee, September 2016, MMath, CS, University of Waterloo
9. Michael Chong, July 2016, MASc, ECE, University of Waterloo
10. Taiyue Liu, July 2016, MASc, ECE, University of Waterloo
11. Omar Alghamdi, November 2015, MASc, ECE, University of Waterloo
12. Aymen Ketata, September 2015, MASc, ECE, University of Waterloo
13. Neeraj Kumar, July 2015, MMath, CS, University of Waterloo
14. Zhuoran Yin, April 2015, MASc, ECE, University of Waterloo
15. Matthew Ma, July 2014, MASc, ECE, University of Waterloo
16. Marianna Rapoport, July 2014, MMath, CS, University of Waterloo

### Fourth Year Design Project Supervision at the University of Waterloo

1. “Kitchen Buddies”, Spring 2022
2. “PhysioConnect”, Spring 2022
3. “LegalRelief: Crowdfunded Legal Fees”, Spring 2021, Winter 2022
4. “DAAK: Smart Mail Recipient”, Spring 2019, Winter 2020
5. “Seat Spotter (app that finds free spots in the library)”, Spring 2015, Winter 2016
6. “Real Time Instant Messaging System”, Spring 2014, Winter 2015

### Projects at the University of Washington

- [UWash1] Konstantin Weitz. String format type system. PhD student (started February 2013). Now at Google, California, USA. October 2013.
- [UWash2] Eric Reed. Units-of-Measurement type system. PhD student (started September 2012). October 2013.
- [UWash3] Stuart A. Pernsteiner. Qualifier polymorphic type systems. PhD student (started September 2012). October 2013.
- [UWash4] Philip Lai. SPARTA: case studies and extensions. Undergraduate research (started June 2012). Now at Indeed.com. October 2013.
- [UWash5] Tyler Rigsby. Verification games: extended type systems; game generation. Undergraduate research (started March 2012). Now at Google, California, USA. October 2013.
- [UWash6] Nathaniel Mote. Verification games: graph description and layout; game generation. Undergraduate research (started January 2011). Now at Facebook, Washington, USA. October 2013.
- [UWash7] Brian Walker. Verification games: website integration. Undergraduate research (started January 2012). Now at Google, California, USA. January 2013.
- [UWash8] Stefan Heule. Improved dataflow analysis for the Checker Framework. Undergraduate and Master’s research (started September 2011). Now at Google, California, USA. July 2013.
- [UWash9] Dimitrios C. Gklezacos, Stefan Heule, and Brandon Holt. Evaluating Practical Non-Null Type Systems for Java. CSE 503 course project. December 2011.
- [UWash10] Mark Davis. Fake enumerations and nullness type checker case study on the OpenJDK javac. Undergraduate research (started July 2011). July 2012.
- [UWash11] Eric Spishak. Fake enumerations and regular expression type checker case studies and extensions; verification games: annotation and cast handling. Undergraduate and Master’s research (started April 2011). Now at Google, California, USA. April 2013.
- [UWash12] Stephanie Dietzel. Interning type checker case studies; verification games: KeyFor integration; testing framework. Undergraduate and Master’s research (started July 2011). Now at Tableau Software. April 2013.
- [UWash13] Andreas Abel, Kivanc Muslu, and Brandon Myers. Dataflow support for the Checker Framework. CSE 501 course project. December 2010.

## Master's projects at ETH Zurich

Master's projects are six month full-time projects.

- [EM1] Manfred Stock. Implementing a Universe Type Checker in Scala. Master's thesis. January 2008.
- [EM2] Mathias Ottiger. Runtime Support for Generics and Transfer in Universe Types. Master's thesis, co-supervised with A. Rudich. August 2007.
- [EM3] Robin Züger. Generic Universe Types in JML. Master's thesis. July 2007.
- [EM4] Andreas Fürer. Combining Runtime and Static Universe Type Inference. Master's thesis. March 2007.
- [EM5] Martin Klebermaß. An Isabelle Formalization of the Universe Type System. Master's thesis, co-supervised with Prof. T. Nipkow, T. U. München. April 2007.
- [EM6] Daniel Schregener. Universe Type System for Scala. Master's thesis. June 2007.
- [EM7] Matthias Niklaus. Static Universe Type Inference using a SAT-Solver. Master's thesis. June 2006.
- [EM8] Marco Bär. Practical Runtime Universe Type Inference. Master's thesis. May 2006.
- [EM9] Stefan Nægeli. Ownership in Design Patterns. Master's thesis. March 2006.
- [EM10] Nathalie Kellenberger. Static Universe Type Inference. Master's thesis. October 2005.
- [EM11] Frank Lyner. Runtime Universe Type Inference. Master's thesis. July 2005.
- [EM12] Thomas Hächler. Applying the Universe Type System to an Industrial Application. Master's thesis. March 2005.

## Semester projects at ETH Zurich

Semester projects have a workload of around 160 hours.

- [ES1] Phokham Nonava. A Universe Type Checker using JSR308. Semester project. September 2008.
- [ES2] Timur Erdag. Visualizer for Universe Type Inference Information. Semester project. September 2007.
- [ES3] Dominique Schneider. Testing Tool for Compilers. Semester project. March 2007.
- [ES4] Annetta Schaad. Universe Type System for Eiffel. Semester project. October 2006.
- [ES5] Ovidio Mallo. MultiJava, JML, and Generics. Semester project. October 2006.
- [ES6] Paolo Bazzi. Integration of Universe Type System Tools into Eclipse. Semester project. October 2006.
- [ES7] David Graf. Implementing Purity and Side Effect Analysis for Java Programs. Semester project. March 2006.
- [ES8] Marco Meyer. Interaction with Ownership Graphs. Semester project. March 2006.
- [ES9] Dirk Wellenzohn. Implementation of a Universe type checker in ESC/Java2. Semester project. October 2005.
- [ES10] Alex Suzuki. Bytecode support for the Universe type system and compiler. Semester project. March 2005.

- [ES11] Thomas Hächler. Static Fields in the Universe Type System. Semester project. July 2004.
- [ES12] Daniel Schregenerberger. Dynamic Typechecking in the Universe Type System. Semester project. October 2004.
- [ES13] Yann Müller. Testcases for the Universe type system compiler. Project assistant. September 2004.