

# Yi LIN

## Software Engineer, Ph.D. in Computer Science

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 Dunedin, New Zealand

Productive software engineer with strong academic background. Strong at working across multiple layers (application, language, operating system, and hardware). Passionate about programming. Interested in building software that pursues performance/robustness/scalability. Interested in emerging techniques. Usually considered as “quick” and “having high standards”.

## TECHNICAL SKILLS

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**System Programming** Language virtual machines, compilers, garbage collectors, operating systems.

**Web Development** Scalable and robust backend development.

**Performance** Performance evaluation, analysis and debugging.

**Software Engineering** Design patterns, software architectures, coding styles, automated testing.

## EMPLOYMENT

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|----------------------------|--|
| <b>Present</b><br>2020     | <b>Software Developer, AUSTRALIAN NATIONAL UNIVERSITY, Remote</b> <ul style="list-style-type: none"><li>&gt; Working on the Memory Management ToolKit (MMTk) project : <a href="https://mmtk.io">https://mmtk.io</a>, a language/VM-neutral memory management/garbage collection framework that aims for high performance. Lead developer for <a href="https://github.com/mmtk/mmtk-core">https://github.com/mmtk/mmtk-core</a>.</li><li>&gt; Undertook major refactoring and development to the code base to turn MMTk from a students' prototype to an open source project.</li><li>&gt; Establish processes for development and manage release cycles for the project.</li><li>&gt; Develop, test and maintain the mmtk-core library and VM bindings.</li><li>&gt; Provide guidance and assistance to developers, researchers and contributors.</li></ul> <div style="display: flex; gap: 5px; margin-top: 5px;"><span>Rust</span> <span>OpenJDK</span> <span>V8</span> <span>JikesRVM</span></div>                           |
| <b>2020</b><br><b>2018</b> | <b>Software Engineer, TRACMAP, Dunedin</b> <ul style="list-style-type: none"><li>&gt; Working in a GPS guidance company for agriculture, building web services that manages IoT devices and processes their geographical data.</li><li>&gt; Take ownership of backend repositories, and review code for peer engineers.</li><li>&gt; Designed REST API for micro services and implemented them from scratch in Typescript and Go.</li><li>&gt; Implemented algorithms for process, transform and visualize spatial-temporal data.</li><li>&gt; Implemented stress tests for IoT data ingress, and optimized performance.</li><li>&gt; Work with designers and testers to deliver new features to end-users.</li><li>&gt; Assist devops in AWS infrastructure setup.</li></ul> <div style="display: flex; gap: 5px; margin-top: 5px;"><span>TypeScript</span> <span>Node.js</span> <span>Go</span> <span>Python</span> <span>Postgres</span> <span>React</span> <span>Docker</span> <span>AWS (IoT core/ECS/RDS/etc)</span></div> |
| <b>2016</b><br><b>2012</b> | <b>Teaching Assistant (Casual), AUSTRALIAN NATIONAL UNIVERSITY, Canberra</b> <ul style="list-style-type: none"><li>&gt; COMP2100 Software Construction, 2012 - 2013</li><li>&gt; COMP2400 Relational Database, 2014 - 2016</li></ul>   |

- 2018 | **Doctor of Philosophy in Computer Science, AUSTRALIAN NATIONAL UNIVERSITY, Canberra**
- 2013 > Thesis : An Efficient Implementation of a Micro Virtual Machine.
- > Supervisors : Steve Blackburn, Antony Hosking, Michael Norrish.
- > Research topics :
  - > The Mu micro virtual machine design and high-performance implementation.  
<https://gitlab.anu.edu.au/mu/mu-impl-fast/>
  - > Backend compiler optimizations and implementation.
  - > Target and language neutral intermediate representation design.
  - > High performance garbage collector implementation in a memory-/thread-safe language.
  - > Performance analysis and evaluation.
- JIT compiler multi-threaded GC exception handling swapstack code patching yieldpoint VM snapshot  
performance evaluation Rust C x86 assembly
  
- 2012 | **Master of Philosophy, AUSTRALIAN NATIONAL UNIVERSITY, Canberra**
- 2011 > Thesis : Virtual Machine Design and High-level Implementation Languages
- > Supervisors : Steve Blackburn, Daniel Frampton
- > Research topics :
  - > Analysis of application/VM interdependency.
  - > Compiler optimizations and implementation for restricted Java.
- Jikes RVM MMTk meta-circularity software engineering profiling Java C
  
- 2011 | **Master of Information Technology, UNIVERSITY OF MELBOURNE, Melbourne**
- 2010 > Overall grade : High Distinction, 83%
  
- 2009 | **Bachelor of Engineering (Computer Science major), SHANGHAI JIAO TONG UNIVERSITY, Shanghai**
- 2005 > Dissertation : Malicious Code Detection in Virtual Machine Binary Translation

 PUBLICATIONS

- 2016 | **Rust as a Language for High Performance GC Implementation, ISMM, Santa Barbara**
- > in Proceedings of the 2016 ACM SIGPLAN International Symposium on Memory Management.
- > authored by *Yi Lin*, Stephen M. Blackburn, Antony L. Hosking, Michael Norrish.
- software engineering high performance immix GC thread safety thread-local allocation parallel GC
  
- 2015 | **Stop and Go : Understanding Yieldpoint Behavior, ISMM, Portland**
- > in Proceedings of the 2015 ACM SIGPLAN International Symposium on Memory Management.
- > authored by *Yi Lin*, Kunshan Wang, Stephen M. Blackburn, Antony L. Hosking, Michael Norrish.
- thread synchronisation conditional trap-based code-patching performance measurement methodology
  
- 2015 | **Draining the Swamp : Micro Virtual Machines as Solid Foundation for Language Development, SNAPL, Asilomar**
- > in Proceedings of the 1st Summit on Advances in Programming Languages.
- > authored by Kunshan Wang, *Yi Lin*, Stephen M. Blackburn, Michael Norrish, Antony L. Hosking.
- micro virtual machine low-level rich runtime code execution garbage collection concurrency
  
- 2012 | **Unpicking the Knot : Teasing Apart VM/Application Interdependencies, VEE, London**
- > in Proceedings of the 8th ACM SIGPLAN/SIGOPS conference on Virtual Execution Environments.
- > authored by *Yi Lin*, Stephen M. Blackburn, Daniel Frampton.
- context tracking profiling low-overhead metacircularity

 AWARDS

- 2013 - 2017 Australian National University Tuition Fee Exemption Scholarship
- 2013 - 2017 Australian National University Research Scholarship
- 2015 - 2017 NICTA PhD Supplement Scholarship