

Tej Chajed

Curriculum Vitae

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Research Interests

I work on formal verification for systems software. In my research I develop **realistic, performant systems**, specify their intended behavior, then prove that the implementation always meet the specification. So far my research has focused on developing a **verified file system** that is concurrent, protects your data even if the computer suddenly reboots, and gets good performance.

Education

2014–2022 **Ph.D. in Computer Science**, MIT, Cambridge, MA.

(expected) *Verifying a concurrent, crash-safe file system with sequential reasoning*

2014–2017 **M.S. in Computer Science**, GPA: 4.0/4.0, MIT, Cambridge, MA.

Verifying an I/O-concurrent file system

2010–2014 **B.S. in Electrical Engineering and Computer Science**, GPA: 3.97/4.0, University of Illinois, Urbana, IL.

Research Experiences

2014–present **Research assistant**, at MIT in the PDOS group.

advised by Frans Kaashoek, Nikolai Zeldovich, and Joseph Tassarotti

2013–2014 **Undergraduate researcher**, at University of Illinois in the DPRG group.

advised by Indranil Gupta

Draft papers

draft 2022 **Reasoning about ownership and asynchrony for crash-safety in separation logic**

Joseph Tassarotti, *Tej Chajed*, Ralf Jung, Frans Kaashoek, Nikolai Zeldovich

draft 2022 **Verifying the DaisyNFS concurrent and crash-safe file system with sequential reasoning**

Tej Chajed, Joseph Tassarotti, Mark Theng, Frans Kaashoek, Nikolai Zeldovich

Conference Publications

OSDI 2021 **GoJournal: a verified, concurrent, crash-safe journaling system**

Tej Chajed, Joseph Tassarotti, Mark Theng, Ralf Jung, M. Frans Kaashoek, Nikolai Zeldovich

SOSP 2019 **Verifying concurrent, crash-safe systems with Perennial**

Tej Chajed, Joseph Tassarotti, M. Frans Kaashoek, Nikolai Zeldovich

- Security 2019 **EverParse: Verified Secure Zero-Copy Parsers for Authenticated Message Formats**
Tahina Ramananandro, Antoine Delignat-Lavaud, Cédric Fournet, Nikhil Swamy, *Tej Chajed*, Nadim Kobeissi, Jonathan Protzenko
- PLDI 2019 **Argosy: Verifying Layered Storage Systems with Recovery Refinement**
Tej Chajed, Joseph Tassarotti, M. Frans Kaashoek, Nikolai Zeldovich
- OSDI 2018 **Verifying concurrent software using movers in CSPEC**
Tej Chajed, M. Frans Kaashoek, Butler Lampson, and Nikolai Zeldovich
- OSDI 2018 **Proving confidentiality in a file system using DiskSec**
Atalay İleri, *Tej Chajed*, Adam Chlipala, M. Frans Kaashoek, Nikolai Zeldovich
- SOSP 2017 **Verifying a high-performance crash-safe file system using a tree specification**
Haogang Chen, *Tej Chajed*, Alex Konradi, Stephanie Wang, Atalay İleri, Adam Chlipala, M. Frans Kaashoek, Nikolai Zeldovich
- SOSP 2015 **Using Crash Hoare Logic for certifying the FSCQ file system**
Haogang Chen, Daniel Ziegler, *Tej Chajed*, Adam Chlipala, M. Frans Kaashoek, and Nikolai Zeldovich
- SoCC 2013 **Natjam: design and evaluation of eviction policies for supporting priorities and deadlines in mapreduce clusters**
Brian Cho, Muntasir Rahman, *Tej Chajed*, Indranil Gupta, Cristina Abad, Nathan Roberts, Philbert Lin

Workshop Papers

- CoqPL 2021 **Record Updates in Coq**
Tej Chajed
- CoqPL 2020 **Verifying concurrent Go code in Coq with Goose**
Tej Chajed, Joseph Tassarotti, M. Frans Kaashoek, Nikolai Zeldovich
- HotOS 2015 **Amber: Decoupling user data from web applications**
Tej Chajed, Jon Gjengset, Jelle van den Hooff, M. Frans Kaashoek, James Mickens, Robert Morris, Nikolai Zeldovich

Teaching Experiences

- Fall 2020 **TA**, 6.826 (Principles of Computer Systems), MIT, Cambridge, MA.
- Fall 2019 **TA**, 6.826 (Principles of Computer Systems), MIT, Cambridge, MA.
- Fall 2017 **TA**, 6.826 (Principles of Computer Systems), MIT, Cambridge, MA.
- Spring 2017 **Course development**, 6.826 (Principles of Computer Systems), MIT, Cambridge, MA.
During this time I designed and implemented the programming assignments for 6.826.

Mentorship

- 2022 Mark Theng ([master's thesis](#))
- 2021 Sharon Lin, undergrad

- 2020 Sydney Gibson ([master's thesis](#))
2019 Eleftherios Ionnidis ([master's thesis](#))
2017 Alex Konradi ([master's thesis](#))
2017 Daniel Ziegler ([master's thesis](#))

Industry Experience

- Summer **Research Intern**, Microsoft Research, Cambridge, UK.
2017 Verifying low-level parsing in F*, with Cédric Fournet
Summer **Software Engineering Intern**, Google, Zürich, Switzerland.
2014

Honors & Awards

- 2014–2019 NSF Graduate Research Fellowship
2014 Jacobs Presidential Fellowship
2010–2014 Chancellor's Scholar

Professional Service

- PLDI 2022 Program Committee
POPL 2022 Artifact Evaluation Committee
POPL 2021 Organized a tutorial “Iris — A Modular Foundation for Higher-Order Concurrent Separation Logic”
EuroDW 2021 EuroSys Doctoral Workshop, PC
POPL 2021 Artifact Evaluation Committee
PLDI 2020 Artifact Evaluation Committee
POPL 2020 Artifact Evaluation Committee
SOSP 2019 Artifact Evaluation Committee

References

Frans Kaashoek
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Nickolai Zeldovich
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Joseph Tassarotti
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