Tej Chajed

Curriculum Vitae

☎ *+1 (217) 840–0140*
✉ *tchajed@mit.edu*
https://chajed.io

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

2014–2021 (expected) **Ph.D. in Computer Science**, MIT, Cambridge, MA.
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 and Nickolai Zeldovich

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

Draft papers

draft 2021 **Separation logic for concurrent storage systems with Peony**
Joseph Tassarotti, Tej Chajed, Ralf Jung, Frans Kaashoek, Nickolai Zeldovich

draft 2021 **Verifying the DaisyNFS concurrent and crash-safe file system with sequential proofs**
Tej Chajed, Joseph Tassarotti, Mark Theng, Frans Kaashoek, Nickolai Zeldovich

Conference Publications

OSDI 2021 **GoJournal: a verified, concurrent, crash-safe journaling system**
Tej Chajed, Joseph Tassarotti, Mark Theng, Ralf Jung, M. Frans Kaashoek, Nickolai Zeldovich

SOSP 2019 **Verifying concurrent, crash-safe systems with Perennial**
Tej Chajed, Joseph Tassarotti, M. Frans Kaashoek, Nickolai 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, Nickolai Zeldovich

OSDI 2018 **Verifying concurrent software using movers in CSPEC**
Tej Chajed, M. Frans Kaashoek, Butler Lampson, and Nickolai Zeldovich

OSDI 2018 **Proving confidentiality in a file system using DiskSec**
Atalay İleri, Tej Chajed, Adam Chlipala, M. Frans Kaashoek, Nickolai 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, Nickolai 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 Nickolai 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, Nickolai 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, Nickolai Zeldovich

Industry Experience

Summer 2017 **Research Intern**, Microsoft Research, Cambridge, UK.
Verifying low-level parsing in F*, with Cédric Fournet

Summer 2014 **Software Engineering Intern**, Google, Zurich, Switzerland.

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.

I helped develop the labs for 6.826 (Principles of Computer Systems) during Spring 2017.

Honors & Awards

2014–2019 NSF Graduate Research Fellowship

2014 Jacobs Presidential Fellowship

2019–2014 Chancellor's Scholar

Professional Service

- PLDI 2022, Program Committee
- Organized a tutorial at POPL 2021, "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**
  kaashoek@mit.edu
- **Nickolai Zeldovich**
  nickolai@csail.mit.edu