

# Tej Chajed

## Curriculum Vitae

☎ +1 (217) 840-0140

✉ [tchajed@mit.edu](mailto: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

2014–2022 **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 2021* **Reasoning about ownership and asynchrony for crash-safety in separation logic**

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

*draft 2021* **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

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## 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

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## 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.

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## 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](#))

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## 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

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## Honors & Awards

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

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## 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

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## References

**Frans Kaashoek**  
kaashoek@mit.edu  
**Nickolai Zeldovich**  
nickolai@csail.mit.edu  
**Joseph Tassarotti**  
joseph.tassarotti@bc.edu