Igor Zablotchi

Mysten Labs
Based in Zürich, Switzerland

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Research Interests

Blockchain, microsecond computing, distributed systems, Byzantine fault tolerance, RDMA, persistent memory, concurrent data structures, neural scaling laws, sparse deep learning.

Education

2020 PhD in Computer Science, EPFL
Thesis: *Distributed Computing with Modern Shared Memory*
Thesis director: Rachid Guerraoui

2015 MSc in Computer Science, EPFL
Thesis: *SMR-NoMembar — Eliminating Memory Barriers from Hazard Pointers*
Supervisors: Maurice Herlihy and Rachid Guerraoui
GPA: 5.91/6 — Ranked 2/89 in CS Section

2012 BSc in Computer Science, EPFL
GPA: 5.83/6 — Ranked 1/77 in CS Section and 3/769 in EPFL overall

Experience

2023– Mysten Labs, Remote — Senior Research Scientist
- Topics: blockchain, Byzantine consensus, distributed/parallel transactions

2021–2022 MIT CSAIL, Cambridge, MA — Postdoctoral Fellow & Associate
- Worked with Prof. Nir Shavit and Prof. Julian Shun
- Topics: parallel-concurrent hybrid systems, neural scaling laws, sparse deep learning

2019 Microsoft Research, Cambridge, UK — Research Internship
- Supervised by Aleksandar Dragojević
- Topic: hybrid hardware-software concurrent data structures

2018 Oracle Labs, Burlington, MA — Research Internship
- Supervised by Virendra Marathe
- Topic: fast RDMA-based consensus protocols, efficient multi-word compare-and-swap

2016 VMware Research, Palo Alto, CA — Research Internship
- Supervised by Dahlia Malkhi and Ittai Abraham
- Topic: transactions across blockchain ledgers with atomicity, fairness and expressiveness

2015 EPFL, Distributed Programming Laboratory — Research Internship
- Supervised by Vasileios Trigonakis and Rachid Guerraoui
- Topic: fast concurrent persistent key-value store

2014–2015 Brown University — MSc Thesis Project (exchange semester)
- Supervised by Maurice Herlihy
- Topic: fast and robust concurrent memory reclamation

2013 ABB Research Switzerland — Research Internship
- Supervised by Ettore Ferranti and Yvonne-Anne Pignolet
- Topics: building automation, brain-computer interface, domain-specific languages

Research Output

• Peer-reviewed Conference Papers [author names in alphabetical order]

2025 *Pilotfish: Distributed Execution for Scalable Blockchains.* FC '25 (to appear).
Quentin Kniep, Lefteris Kokoris-Kogias, Alberto Sonnino, Igor Zablotchi, Nuda Zhang.

2025 *Partial Synchrony for Free: New Upper Bounds for Byzantine Agreement*. SODA '25.
Pierre Civit, Muhammad Ayaz Dzulfikar, Seth Gilbert, Rachid Guerraoui, Jovan Komatovic, Manuel Vidigueira, Igor Zablotchi.

2024 *Efficient Signature-Free Validated Agreement*. DISC '24.
Pierre Civit, Muhammad Ayaz Dzulfikar, Seth Gilbert, Rachid Guerraoui, Jovan Komatovic, Manuel Vidigueira, Igor Zablotchi.

2024 *SWARM: Replicating Shared Disaggregated-Memory Data in No Time.* SOSP '24.
Antoine Murat, Clément Burgelin, Athanasios Xygkis, Igor Zablotchi, Marcos Kawazoe Aguilera, Rachid Guerraoui.

2024 *DSig: Breaking the Barrier of Signatures in Data Centers.* OSDI '24.
Marcos K. Aguilera, Clément Burgelin, Rachid Guerraoui, Antoine Murat, Athanasios Xygkis, Igor Zablotchi.

2024 *Parallel k-Core Decomposition with Batched Updates and Asynchronous Reads.* PPoPP '24.
Quanquan C. Liu, Julian Shun, Igor Zablotchi.

2023 *uBFT: Microsecond-scale BFT using Disaggregated Memory.* ASPLOS '23.
Marcos K. Aguilera, Naama Ben-David, Rachid Guerraoui, Antoine Murat, Athanasios Xygkis and Igor Zablotchi.

2021 *Frugal Byzantine Computing*. DISC '21.
Marcos K. Aguilera, Naama Ben-David, Rachid Guerraoui, Dalia Papuc, Athanasios Xygkis and Igor Zablotchi.

2021 *Leaderless Consensus.* ICDCS '21. **Best paper award.**
Karolos Antoniadis, Antoine Desjardins, Vincent Gramoli, Rachid Guerraoui and Igor Zablotchi.

2020 *Microsecond Consensus for Microsecond Applications.* OSDI '20
Marcos K. Aguilera, Naama Ben-David, Rachid Guerraoui, Virendra J. Marathe, Athanasios Xygkis and Igor Zablotchi.

2020 *Efficient Multi-word Compare and Swap.* DISC '20.
Rachid Guerraoui, Alex Kogan, Virendra J. Marathe and Igor Zablotchi.

2019 *The Impact of RDMA on Agreement*. PODC '19.
Marcos K. Aguilera, Naama Ben-David, Rachid Guerraoui, Virendra J. Marathe and Igor Zablotchi.

2018 *Log-Free Concurrent Data Structures.* USENIX ATC '18.
Tudor David, Aleksandar Dragojević, Rachid Guerraoui and Igor Zablotchi.

2018 *The Inherent Cost of Remembering Consistently*. SPAA '18.
Nachshon Cohen, Rachid Guerraoui and Igor Zablotchi

2017 *FloDB: Unlocking Memory in Persistent Key-Value Stores.* EuroSys '17.
Oana Balmau, Rachid Guerraoui, Vasileios Trigonakis and Igor Zablotchi.

2017 *The Disclosure Power of Shared Objects.* NETYS '17.
Peva Blanchard, Rachid Guerraoui, Julien Stainer and Igor Zablotchi.

2016 *Fast and Robust Memory Reclamation for Concurrent Data Structures.* SPAA '16.
Oana Balmau, Rachid Guerraoui, Maurice Herlihy and Igor Zablotchi.

• Journal Articles [author names in alphabetical order]

2024 *Honeycomb: Ordered Key-Value Store Acceleration on an FPGA-Based SmartNIC*. IEEE Transactions on Computers 73(3).
Junyi Liu, Aleksandar Dragojevic, Shane T. Fleming, Antonios Katsarakis, Dario Korolija, Igor Zablotchi, Ho-Cheung Ng, Anuj Kalia, Miguel Castro.

2023 *Leaderless Consensus*. JPDC 176.
Karolos Antoniadis, Julien Benhaim, Antoine Desjardins, Poroma Elias, Vincent Gramoli, Rachid Guerraoui, Gauthier Voron and Igor Zablotchi.

• Conference Presentations

2024 Parallel k-Core Decomposition with Batched Updates and Asynchronous Reads. PPoPP '24

2020 Microsecond Consensus for Microsecond Applications. OSDI '20

2020 Efficient Multi-word Compare and Swap. DISC '20

2018 The Inherent Cost of Remembering Consistently. SPAA '18

2017 The Disclosure Power of Shared Objects. NETYS '17.

2016 Fast and Robust Memory Reclamation for Concurrent Data Structures. SPAA '16.

• Conference Posters

2018 Log-Free Concurrent Data Structures. USENIX ATC '18

2017 FloDB: Unlocking Memory in Persistent Key-Value Stores. EuroSys '17

Languages

English & French — fluent
German — beginner
Romanian — native language

Honors & Awards

2022 EuroSys Roger Needham PhD Award — Honorable Mention
2021 EPFL Doctoral Program Thesis Distinction
2019 EPFL IC Teaching Assistant Award
2015 EPFL PhD Fellowship
2015 Brown University Presidential Fellowship for Incoming Graduate Students
2015 *Société Suisse d'Informatique* Prize — for achieving 2nd highest GPA in EPFL CS MSc Program
2012 EPFL MSc Excellence Fellowship
2012 EPFL Prize — for achieving 3rd highest GPA in 2012 graduating class

Teaching

• Teaching Assistant

2016-2020 Concurrent Algorithms. Graduate class. EPFL
2019 Information Security and Privacy. Graduate class. EPFL
2017 Digital System Design. Undergraduate class. EPFL
2016 Practice of Object-Oriented Programming. Undergraduate class. EPFL

• Student Assistant

2014-2015 Natural Language Processing. Graduate class. EPFL
2010-2014 Discrete Mathematics, Calculus, Linear Algebra. Undergraduate classes. EPFL

• Mentoring

2020-2021 Dalia Papuc. *Fast Byzantine Broadcast with RDMA*. Research Internship. EPFL
2020 Kristian Brünn. *Byzantine Fault Tolerant State Machine Replication with RDMA*. MSc Thesis. EPFL
2019-2020 Loïc Vandenberghe and Manuel Vidigueira. *Fast RDMA Consensus*. MSc Semester Project. EPFL
2018 Ivi Dimopoulou. *Implementation and Evaluation of 1-Fence Concurrent Persistent Data Structures*. MSc Semester Project. EPFL

Professional Service

• Program Committee

2024 PODC (International Symposium on Principles of Distributed Computing)
2021 SRDS (International Symposium on Reliable Distributed Systems)

• Journal Reviewer

2022 Transactions on Parallel Computing
2021-2022 Distributed Computing
2021 Algorithmica

• External Reviewer

2022 FSTTCS (Foundations of Software Technology and Theoretical Computer Science)
2022 PODC (Symposium on Principles of Distributed Computing)
2019–2021 DISC (International Symposium on Distributed Computing)
2017 IPDPS (International Parallel and Distributed Processing Symposium)
2015 SPAA (Symposium on Parallelism in Algorithms and Architectures)