

Mehdi Bouaziz

PRINCIPAL SOFTWARE ENGINEER · STATIC ANALYSIS EXPERT

Lille, France

📞 +33665399005 | ✉ mehdi@skiplabs.io | 🏠 bouaziz.org | 📷 mbouaziz | 📱 mbouaziz | 🌐 mehdibouaziz | 🏠 Mehdi Bouaziz

Experience

SkipLabs

PRINCIPAL SOFTWARE ENGINEER

France · Remote

Feb 2024 – Present

- Working on SkipLang and SkipRuntime, the open-source framework for building reactive backend services
- Worked on SkJS, a reactive TypeScript typechecker with added constraints on mutability
- Worked on Skip language support and SKDB, the reactive database

Atacama

CO-FOUNDER

Remote

Jun 2023 – Present

- Developing innovative solutions for clients in B2B software engineering
- Providing technical advisory on blockchain, smart contracts, and competitive programming matters

Nomadic Labs

STAFF SOFTWARE ENGINEER, TECHLEAD

France · Remote

Jan 2022 – Feb 2024

- Led development of new protocol features in Tezos upgrades from Jakarta to Paris
- including Adaptive Issuance, New Staking Mechanisms, Layer 1/Layer 2 integration
- Main reviewer of most protocol features: Consensus Key, Voting procedures, Transaction and Smart Contract Optimistic Rollups, ...
- Technical interviewer and recruiter, led internship management and recruiting initiatives
- Collaborated with academic teams: SALTO, CAVOC, Ciao-PP, GOSPEL, ...
- Intern manager and PhD co-advisor for research on static analysis

SENIOR SOFTWARE ENGINEER

Sep 2019 – Dec 2021

- Main developer/reviewer of protocol features in Tezos upgrades from Carthage to Ithaca
- Developed Michelson smart contract language features: On-Chain Views, Global Constants, Cryptographic Primitives, Timelocks, ...
- Implemented new consensus algorithms: Emmy*, Tenderbake
- Created capability-based tokens (Tickets) and Privacy-Preserving Transactions using Sapling
- Built an internal developer productivity tool (Tezos Developer Dashboard)
- Reviewer for Tezos Foundation grants, conducted on-site training sessions

Facebook (Meta)

SENIOR RESEARCH SCIENTIST / SENIOR SOFTWARE ENGINEER

London, UK · On-site

Mar 2018 – Jul 2019

- Developed static analyses for C/C++/ObjC/Java to improve code quality, security, and performance
- Worked on Infer static analyzer - open-source static analysis tool
- Led development of cost analysis, contributed to RacerD, and various checkers and frontends

RESEARCH SCIENTIST / SOFTWARE ENGINEER

Dec 2016 – Feb 2018

- Developed static analyses for C/C++/ObjC/Java focusing on code quality and security
- Contributed to Inferbo: Infer-based buffer overrun analyzer

VISITING RESEARCHER

Paris, France · Remote

Apr 2016 – Nov 2016

- Developed static taint analysis for Hack (Zoncolan security analyzer)
- Early reviewer of Pyre, Facebook's static type checker for Python

SOFTWARE ENGINEER INTERN

Seattle, WA, USA · On-site

Aug 2015 – Nov 2015

- Developed abstract domains for large-scale, fast and precise static analysis of information flows (Zoncolan)

Inria

R&D ENGINEER

Paris, France · Hybrid

Sep 2016 – Nov 2016

- Developed abstract domains for static analysis of security properties
- Worked on AnaStaSec project for formal verification of aircraft-embedded OS security

École normale supérieure

RESEARCH ASSISTANT

Paris, France · Hybrid

Nov 2012 – Aug 2016

- Low-level security static analysis of aircraft-embedded OS for AnaStaSec ANR project
- Four-year project supporting formal verification of large-scale software-intensive industrial systems

Université Paris Cité

TEACHING ASSISTANT

Paris, France · On-site

Sep 2013 – Aug 2016

- Taught Bachelor students: Introduction to CS & programming (Java), Computer science concepts
- Advanced programming in C, Introduction to algorithms (Python), Programming projects

Ville de Paris

VOCATIONAL TRAINER

Paris, France · On-site

Sep 2014 – Oct 2014

- Training librarians of Paris how to teach programming

Microsoft Research

RESEARCH INTERN

- Developed a scalable cloud-based version of CodeContracts static checker (Cloudot)

RESEARCH INTERN

- Improvements on CodeContracts static checker: effective caching system
- New algorithm of object invariants inference
- Tool to analyze version-based metrics on contracts of a project

RESEARCH INTERN

- Distributed automatic security test generation for Office
- Redesigned SAGE for larger scale: distributed fuzzing, fault-tolerance, job migration
- Job sharding and UI improvements for scalability and security testing

Stevens Institute of Technology

RESEARCH INTERN

- Developed a symbolic interpreter for JavaScript as part of static security analysis

MLstate

RESEARCH ENGINEER

- Part-time consulting on design & implementation of Opa language toolchain

R&D INTERN

- Automatic & optimized client/server slicing of Opa web applications
- Design & implementation of common foreign function interface (FFI) for OCaml and JavaScript backends

RESEARCH INTERN

- Research & development on Abstract Interpretation and static analysis of web properties
- Specialized in abstract domains for strings and databases analysis

Awards & Honors

Feb 2010	World Finalist , ACM ICPC World Finals 2010	Harbin, China
Nov 2009	Gold Medalist , Southwestern Europe Regional Contest (SWERC) of the ICPC	Madrid, Spain
Jul 2007	Admitted and ranked 2nd nationwide , École normale supérieure, rue d'Ulm	Paris, France
Aug 2005	Gold Medalist , International Olympiad in Informatics (IOI) 2005	Nowy Sącz, Poland
Jul 2005	Bronze Medalist , Central European Olympiad in Informatics (CEOI) 2005	Sárospatak, Hungary
May 2005	Winner , French-Australian Regional Informatics Olympiad (FARIO)	France/Australia
Sep 2004	Bronze Medalist , International Olympiad in Informatics (IOI) 2004	Athens, Greece
2004 – 2007	Finalist , French National Contest in Informatics (Prologin)	Paris, France

Education

École normale supérieure

DOCTORAL STUDIES - COMPUTER SCIENCE

- Doctoral studies at École doctorale de Sciences Mathématiques de Paris Centre (ED 386)
- Subject: "Static analysis of security properties by abstract interpretation"

ENS GRADUATE DEGREE IN SCIENCES, COMPUTER SCIENCE

- Diploma of the École normale supérieure with major in Computer Science
- Elite French institution for training through research

MPRI (Master Parisien de Recherche en Informatique)

MASTER OF SCIENCE - COMPUTER SCIENCE

- Research-oriented master programme jointly run by ENS, École Polytechnique, Université Paris 7 & 6
- Specialized elite curriculum in theoretical computer science and advanced algorithms

Université Paris 7 Diderot / École normale supérieure

BACHELOR OF SCIENCE - COMPUTER SCIENCE

- Foundation in computer science theory and programming

Lycée du Parc

CLASSES PRÉPARATOIRES AUX GRANDES ÉCOLES

- Elite preparatory program in Mathematics, Physics and Computer Science for French engineering schools

France-IOI Association

ALGORITHMIC TRAINING

- Intensive algorithmic programming and problem-solving training for the International Olympiad in Informatics

Lycée Lumière

AERONAUTICS INITIATION CERTIFICATE

Redmond, WA, USA · On-site

Jul 2012 – Oct 2012

Aug 2011 – Nov 2011

Apr 2011 – Jul 2011

Hoboken, NJ, USA · On-site

Sep 2010 – Feb 2011

Paris, France · Part-time

Nov 2009 – Apr 2010

Edinburgh, UK · Hybrid

Mar 2009 – Aug 2009

Paris, France · On-site

Jun 2008 – Aug 2008

Paris, France

2012 – 2017

2007 – 2012

Paris, France

2008 – 2010

Paris, France

2007 – 2008

Lyon, France

2005 – 2007

Paris, France

2004 – 2005

Luxeuil-les-Bains, France

2003 – 2004

Publications

Abstract Interpretation of Michelson smart-contracts

JOURNAL/CONFERENCE PAPER

ACM / SOAP@PLDI 2022

Jun 2022

- Static analysis of smart-contracts for blockchain platforms with soundness guarantees
- Implemented within MOPSA modular static analyzer for Tezos Michelson language

Static Resource Analysis at Scale

JOURNAL/CONFERENCE PAPER

Springer / SAS@SPLASH 2020

Nov 2020

- Large-scale static analysis techniques for resource consumption verification
- Applications to modern software systems and performance optimization

A case for static analyzers in the cloud

JOURNAL/CONFERENCE PAPER

Elsevier / Bytecode@ETAPS 2013

Mar 2013

- Cloud-based static analyzer architecture (Cloudot) for scalable program verification
- Novel approach to leveraging cloud resources for static analysis performance

Inference of Necessary Field conditions with abstract interpretation

JOURNAL/CONFERENCE PAPER

Springer / APLAS 2012

Dec 2012

- Novel static analysis for inferring object invariants in object-oriented programs
- Integrated into cccheck static analyzer for .NET with significant user impact

TreeKs: A Functor to Make Numerical Abstract Domains Scalable

JOURNAL/CONFERENCE PAPER

Elsevier / NSAD@SAS 2012

Nov 2012

- Innovative approach to scaling relational numerical abstract domains
- Maintains precision while ensuring linear complexity for large program analysis

Jsx: a symbolic evaluator for JavaScript

TECHNICAL REPORT

Stevens Institute of Technology

Feb 2011

- Symbolic interpreter for JavaScript as part of static security analyzer

TreeKs: un foncteur pour faire passer les domaines numériques à l'échelle

MASTER'S THESIS

École normale supérieure

Aug 2010

- Master internship report on scalable numerical abstract domains

A Unified Library of Primitives for QML Compilers and Interpreters

TECHNICAL REPORT

MLstate

Sep 2009

- Standardized interface for QML/Opa language primitive implementations

Optimized Client-Server Distribution of Ajax Web Applications

TECHNICAL REPORT

MLstate

Sep 2009

- Automatic client/server slicing for Opa web applications

Approximation statique de propriétés d'applications web

TECHNICAL REPORT

MLstate

Sep 2008

- Static analysis of web properties using abstract interpretation

Volunteering

ICPC - ACM International Collegiate Programming Contest

JUDGE

Paris, France

Jan 2017 – Jan 2024

- Judge for Southwestern European regional ACM ICPC semi-finals: SWERC 2017, 2018, 2019, 2020-2021, and 2023-2024
- Problem analysis sessions and educational content for competitive programming

France-IOI - International Olympiad in Informatics

VOLUNTEER & DEPUTY TEAM LEADER

France / International

Jan 2006 – Present

- Deputy leader of French team: IOI 2008 (Cairo), IOI 2010 (Waterloo), IOI 2013 (Brisbane)
- Course development, mentoring during training camps, task creation
- Translation, proofreading, and educational content development for algorithmic training

Castor Informatique - French Bebras Challenge

MEMBER OF THE ORGANIZATION

Remote, France

Jan 2012 – Jan 2016

- Invented tasks, developed interactive tasks, translated, proofread, and improved contest problems
- Tested the platform and participated in quality assurance
- Presented France country report at international Bebras Task Workshop (Sankt Pölten, Austria, 2015)

Egyptian Training Camp for International Olympiad in Informatics

INVITED COACH

Cairo, Egypt

Jun 2015

- Invited teacher for summer camp to train Egyptian high school students
- Taught algorithmics and competitive programming for IOI preparation