Marc **Desgroseilliers**

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Applied mathematician with expertise in cryptography, machine learning, and information theory. Over 5+ years of experience designing and deploying privacy-enhancing technologies, including integration with blockchain systems. Proven track record of research and implementation in multiparty computation, privacy-preserving ML, and secure system design.

Professional Experience

Arcium — *Remote*
Senior R&D Software Developer — *July 2024 - April 2025*

- Designed secure interfaces across different threat models (honest-but-curious vs. malicious)
- Developed multiparty computation (MPC) backends for efficient computations on elliptic curves, optimizing representations and conversions
- Integrated legacy infrastructures into blockchain ecosystems
- Assessed feasibility and performance of LLM inference (DeepSeek) within the Arcium network

Malicious Security | Elliptic Curve Cryptography | Blockchain

Inpher — *Lausanne, Switzerland*
Senior Machine Learning Engineer — *2020 - 2024*

- Led the development of a privacy-preserving implementation of XGBoost in an MPC setting
- Designed a Domain-Specific Language (DSL) and compiler in Scala for ML algorithm design
- Built new IO system architecture in Rust for secure computation environments
- Initiated and contributed to a privacy-preserving AI chatbot project using LLMs

Tree-based learning | Recommender systems | Data Independent Algorithms | Cryptography

UPC — *Zurich, Switzerland*
Data Scientist — *2018 - 2020*

- Spearheaded CPD fault detection in hybrid fiber-coaxial (HFC) networks, from data exploration to deployment
- Improved positive fault detection rate from 2% to over 80%
- Implemented time series models and ensemble learning methods to analyze network health
- Created visualizations and analytics dashboards for cross-functional teams

Time series | Data engineering | Data Visualization

Education

Ecole Polytechnique Federale de Lausanne EPFL — *Switzerland*
Doctorate in Information Theory — *2010 - 2015*

- Thesis: Reducing Randomness in Matrix Models for Wireless Communication
- Courses: Probability | Signal Processing | Machine learning | Graphical Models

University Paris-Sud XI — *France*
Erasmus Mundus Masters: Algebra, Geometry and Number Theory — *2008 - 2010*

- Thesis: On some convex cocompact groups in real hyperbolic space (Published in Geometry and Topology)
- Courses: Geometric Group Theory | Number Theory | Differential Geometry

Publications

Desgroseilliers, M. (2015). *Reducing Randomness in Matrix Models for Wireless Communication*. EPFL.

Inpher. (2024,). Eurocrypt. *Affiliated Workshop: Tutorial and Practices on Hybrid Pets*.

Kevin Deforth, N. G. M. G. D. J. M. V., Marc Desgroseilliers. (2022). XORBoost: Tree Boosting in the Multiparty Computation Setting. *Proceedings on Privacy Enhancing Technologies*, *4*, 66–85.

Marc Desgroseilliers, E. P., Olivier Lévêque. (2013). Spatial degrees of freedom of MIMO systems in line-of-sight environment. *IEEE International Symposium on Information Theory*, 834–838.

Skills

Languages English – Native | French –Native | Italian – C1
Tech Stack Rust | Python (+ data stack) | Scala | R | SQL