

Meenatchi Sundaram Muthu Selva Annamalai

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Education

- 2022— **PhD Cybersecurity**, *Cybersecurity CDT, University College London*, United Kingdom.
- 2021 **BEng Computing**, *Imperial College London*, United Kingdom.
First Class Honours
- 2015 **GCE A-Levels**, *National Junior College*, Singapore.
90 Rank Points (Straight As)

Honors and Awards

- 2021 **Winton Capital Applied Undergraduate Project Computing Prize.**
Awarded for an outstanding final year project in applied computing
- 2021 **Governors' Prize.**
Awarded to the final year student with the best overall performance in BEng Computing
- 2021 **Dean's List Year 3.**
Top 10% of year. Subjects taken: Number Theory, Network and Web Security, Type Systems, Distributed Algorithms, Computer Vision, Operations Research, Software Engineering Group Project, Final Year Project
- 2020 **Dean's List Year 2.**
Top 10% of year. Subjects taken: Algorithms II, Compilers, Computing Laboratory II, Models of Computation, Networks and Communications, Operating Systems, Probability and Statistics, Software Engineering and Design, Computing Group Project
- 2019 **Dean's List Year 1.**
Top 10% of year. Subjects taken: Computer Architecture, Databases I, Discrete Structures, Graphs and Algorithms, Hardware, Logic, Mathematical Methods, Programming, Reasoning about Programs, Computing Topics, Computing Group Project
- 2016 **National Science Scholarship (BS-PhD).**
Awarded to students with a keen interest in Science and Research, and excellent academic standing to pursue an undergraduate followed by doctoral degree in overseas universities

Publications

- A Linear Reconstruction Approach for Attribute Inference Attacks against Synthetic Data**,
In 33rd USENIX Security Symposium (USENIX Security 2024).
Annamalai, M. S. M. S., Gadotti, A., Rocher, L.
- Collaboration with Google Research **FP-Fed: Privacy-Preserving Federated Detection of Browser Fingerprinting**, *In 31st Network and Distributed System Security Symposium (NDSS 2024).*
Annamalai, M. S. M. S., Bilogrevic, I., De Cristofaro, E.

CoVnita, an end-to-end privacy-preserving framework for SARS-CoV-2 classification., *In Scientific Reports* 13.

Sim J. J., Zhou W., Chan F. M., **Annamalai, M. S. M. S.**, Deng X., Tan B. H. M. & Aung, K. M. M.

Communication-Efficient Secure Federated Statistical Tests from Multiparty Homomorphic Encryption., *In Applied Sciences* 12.

Annamalai, M. S. M. S., Jin, C., & Aung, K. M. M.

Pool Inference Attacks on Local Differential Privacy, *In 31st USENIX Security Symposium (USENIX Security 2022).*

Gadotti, A., Houssiau, F., **Annamalai, M. S. M. S.**, & de Montjoye, Y. A.

The Observatory of Anonymity: An Interactive Tool to Understand Re-Identification Risks in 89 countries, *In Companion Proceedings of the Web Conference 2021 (pp. 687-689).*

Rocher, L., **Muthu, M. S.**, & de Montjoye, Y. A.

Privacy Preserving Collective Learning with Homomorphic Encryption, *In IEEE Access.*

Paul, J., **Annamalai, M. S. M. S.**, Ming, W., Al Badawi, A., Veeravalli, B., & Aung, K. M. M.

Research Experiences

2022 **1 Year Research Attachment,** Institute for Infocomm Research.

Project 1: Collaborative polygenic risk score validation based on Multiparty Homomorphic Encryption and Secure Multiparty Computation

Project 2: Reconstruction attacks on synthetic data

Mentors: Khin Mi Mi Aung and Andrea Gadotti

2021 **Final Year Project,** Imperial College London.

Project: Studying the information leakage in differentially private mechanisms

Mentors: Andrea Gadotti and Yves-Alexandre de Montjoye

○ Awarded Winton Capital Applied Undergraduate Project Computing Prize

2020 **Undergraduate Research Opportunities Programme,** Imperial College London.

Project: Privacy risk assessment tool for real-world data collections

Mentors: Luc Rocher and Yves-Alexandre de Montjoye

○ Designed and created interactive website that demonstrates re-identification risk in 89 countries based on prior research done in the group. Ported over code from Julia to Typescript for deployment to website and further optimized routines using WebAssembly. <https://cpg.doc.ic.ac.uk/observatory/>

○ Full code is available at <https://github.com/computationalprivacy/observatory>

2019 **8 Week Research Attachment,** Institute for Infocomm Research.

Project: Homomorphic Encryption for Transfer Learning with MIMIC-III Timeseries Data

Mentors: Jestine Paul and Khin Mi Mi Aung

○ Explored the applicability of HE in a transfer learning setting for LSTMs

2014 **H3 Research, GCE A Levels,** Institute for High Performance Computing.

Project: Designing photonics components and circuits using photonic crystals

Mentors: Chu Hong Son

○ Modelled and simulated photonic crystal structures in order to optimize them for biosensor applications

Presentations

2021 **The Observatory of Anonymity: An Interactive Tool to Understand Re-Identification Risks in 89 countries.**

Companion Proceedings of the Web Conference 2021. <https://rocher.lc/observatory-www21.pdf>

Teaching

Undergraduate Teaching Assistant

- 2021 **Discrete Structures, Logic, Reasoning about Programs and Graphs and Algorithms**, *Imperial College London*.
Conducted weekly tutorial sessions and graded homework

Personal Projects

- 2022 **STASYS**.
Created a cross-platform open source aim tracing application for air pistol/air rifle targets using OpenCV, React, Typescript and Rust. <https://github.com/msundarinsa/stasys-tauri>
- 2022 **Solli**.
Created a Wordle clone in Tamil using Vue and Javascript. <https://github.com/msundarinsa/wordle-tamil-src>
- 2013 **Enrichment Science and Training Programme**.
Developed mobile app to enhance classroom learning.
- 2011 **Special Programme in Enquiry and Research**.
Programmed a hygienic, non-touch interface for feedback systems deployed in unsanitary locations using Microsoft Kinect.

Computer skills

Languages: Python, Typescript/Javascript, Go, Rust, C/C++, Java, Haskell, Elixir

Experiences in: Software engineering and design, Secure multiparty computation (MP-SPDZ), Homomorphic encryption (Lattigo, Microsoft SEAL), Web, mobile and desktop applications, Multiprocess parallel programming, Machine Learning/Deep Learning, Numerical integration

Extra-curriculars

- 2019 **Major Event Officer of Imperial College Singapore Society**.
Produced a student-written and performed full-length musical
- 2014 **Vice President of IT & Innovation Club**.
Organized and taught programming courses and workshops for members, lead teams in competitions and managed club's administrative affairs