# Radu-Alexandru MANTU

(+40) 729 589 162
andru.mantu@gmail.com
github.com/RaduMantu

259 Gheorghe Ionescu Sisesti, Ap. 1
Bucharest, Romania

## EDUCATION

**Faculty of Automatic Control and Computer Science,**
**Polytechnic University of Bucharest,**

- **Doctorate in Network Security** **2020-2025**
  Thesis: *Enhancing application awareness through distributed firewalling*
- **Master of Advanced Security Systems** **2018-2020**
  Thesis: *Electromagnetic Analysis of Computational Systems*
- **Bachelor of Computer Science** **2014-2018**
  Thesis: *Control Flow Integrity based on Controlled Channel*

**"George Cosbuc" Bilingual National College**

- **High School Diploma** **2010-2014**

Degree in mathematics-informatics and a bilingual specialization, with focus on English.

## WORK EXPERIENCE

- **SANCTUARY Systems GmbH. – software engineer** **2023-present**
  Continued the work started at TU Darmstadt. Additionally implemented an RPC mechanism based on Capnp and running over a CanBus | ISO-TP | TLS secure channel for communicating with a Hardware Security Module. Also implemented a number of protocol-specific scanners for OT networks.
- **Technical University of Darmstadt – research assistant** **2022**
  Helped develop and port a secure platform consisting of an ARM hypervisor and secure OS from FVP to actual hardware (i.MX8M platforms).
- **Polytechnic University of Bucharest – research assistant** **2020-present**
  Conducted research regarding computer network firewalling technologies. Founded and organized three editions of the ARM Summer School, sponsored by Google and NXP.
- **National University of Singapore – research intern** **2020**
  *"Refined Grey-Box Fuzzing with SIVO" – DIMVA2021*
  Helped develop core components of SIVO, a state-of-the-art fuzzer. My primary responsibility was creating a testing environment for comparing SIVO to 11 other widely recognized fuzzers on a wide range of benchmark programs. Currently working on integrating it into Google FuzzBench.
- **Polytechnic University of Bucharest – student research assistant** **2017-2020**
  *"Control Flow Integrity Based on Controlled Channel" – CSCS2019*
  Developed a Linux Kernel hack that allows tracing the memory accesses of a pool of processes, based on page table invalidation. Utilizing the logs generated as a result of a training process, we constructed a Control Flow Graph, used to ensure Control Flow Integrity.
- **Romanian Foreign Intelligence Service – intern** **2018**
  One month course in Cryptology under the tutelage of domain experts. Studied classical ciphers, stream and block ciphers, steganography and related mathematics.
- **Fitbit – software engineer intern** **2018**
  Developed a proxy web service based on Spring API between HTML and Apache Thrift. My main contributions to the project consisted of implementing a JAR introspection system used to automatically translate the classes that implement the Thrift client interfaces to a GraphQL schema and a method of modifying the class loader hierarchy at runtime to provide additional isolation to the loaded client stubs.
- **Teaching assistant** **2018-present**
  Taught 1$^{st}$ year *Introduction to Informatics* and *Assembly Language*, 2$^{nd}$ year *Communication Protocols*, 4$^{th}$ year *Performance Evaluation* and *Introduction to Computer Security* labs to Computer Science students. Contributed with laboratory material and assignment grading. Acted as BitDefender ambassador for the Performance Evaluation team since February 2019 and until March 2021.

## TECHNICAL EXPERIENCE

- **Unikraft Summer of Code - Unikraft** **2021**
  Attended a two week online workshop on Unikraft, a unikernel generation framework. Learned basic usage, application/library porting, debugging and gained insight into internal systems (e.g.: syscall shim). Also participated in the final hackathon where my team placed first.
- **Security Summer School at University of Padua** **2019**
  Attended talks at this week-long summer school. Presented work on controlled channels.
- **Innovation Labs Mentorship Programme – ROS** **2019**
  Programmed an autonomous floor sweeper starting from a manually operated one that our team modified. Using ROS, a human operator would guide the robot in order to create a map of the floor using its lidar sensor. Then, the robot would create an optimal route for traversing the entire surface and dynamically update its plan if it encountered any obstacles. This project has been put on hold while we refocus on another task with a better defined team.
- **Palo Alto CTF** **2019**
  Participated in the Palo Alto Networks Cybersecurity Academy CTF.
- **NXP Linux Embedded Challenge – OpenGL and UDOO Neo** **2017**
  Programmed a robot to acquire data using a lidar while moving. The data was processed and sent to a server that inserted individual entries or deleted regions from a quad tree, ran a clustering algorithm on the known vertices and displayed the map of the explored area with each identified object colored differently.
- **GameCup first edition – OpenGL and Unity** **2017**
  Reached the final stage of the competition with a gravity themed 3D puzzle game developed in Unity.
- **Innovation Labs Mentorship Programme – Neural Networks, Android Development, Databases** (2017)
  Helped build a neural network that, based on the shipments and sales history of a shop, predicts within a reasonable margin of error the probability that expired goods exist on display and the affected quantity. Created a database generator for training and testing the neural network.
- **NLP legal application research – Python and Stanford Parser** **2014-2016**
  Used Stanford Parser to determine the definition of terms in legal contracts. The terms were obtained through a probabilistic heuristic. The definitions were extracted from recurring structures observed in the parse trees
- **Maze Solving Robot – Arduino and OpenGL** **2013**
  Ranked 2$^{nd}$ at InfoEducatie, national stage. The robot traversed a maze and sent data to a computer that generated a 3D map with different height levels.
- **Database Management System – Visual C# and SQL** **2012**
  For InfoEducatie contest, national stage. Software allowed database manipulation for retail clerks based on authorization level.

## LANGUAGES

- English – Cambridge English: Advanced (CAE)
- German – Goethe-Zertifikat: A2