

# FOIVOS TSIMPOURLAS

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San Francisco, CA, United States

## PROFESSIONAL EXPERIENCE

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### OpenAI

Research Scientist

July 2023 - Present

San Francisco, CA

- I am part of OpenAI's collective research effort in developing GPT-based Scientist models.
- I conduct research on RL, chain of actions and model scaling to help AI tackle tough reasoning problems.

### TikTok - ByteDance

Research Scientist, Contractor

Oct 2022 - Jan 2023

London, UK

- I developed and published the first LLM-based tool for fault localization in Go concurrent test executions.

### Facebook AI Research

Research Scientist Intern

May 2022 - August 2022

Menlo Park, CA

- I created the first directed code generator using Deep RL, LLMs and sampling guidance towards compiler features.
- I published my work in PACT and integrated it into CompilerGym, a state-of-the-art research tool for RL.

### Athens Digital Arts Festival

Research Scientist, Contractor

Oct 2020 - Dec 2021

Remote

- I secured the research grant and led the research effort for "AITrace", a real time recommender for museums.
- I developed the AI for the project's pilot and reported our experimental findings to the Greek Deputy of Culture.

### ARM Ltd.

Software Engineer, Intern

Sept 2019 - Jan 2020

Cambridge, UK

- I was the DRI for the first distributed GICv4 interrupt controller's software model for ARM-based clusters.
- I collaborated with Architecture researchers and Modeling engineers to implement and ship to production.

## EDUCATION

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### PhD in Informatics

University of Edinburgh (UoE)

2019 - 2023

Thesis: "Deep Language Models for Software Testing and Optimisation"

Supervisors: Ajitha Rajan, Hugh Leather, Pavlos Petoumenos

- My research contributed to the integration of AI into compilers using LLMs, RL and the LLVM framework.

### MSc by Research, CDT in Pervasive Parallelism

University of Edinburgh (UoE)

2018 - 2019

Distinction

Thesis: "Learning to Encode and Classify Test Executions"

Supervisors: Ajitha Rajan, Christophe Dubach

- My research focused on deep learning for compile runtime analysis and program correctness prediction.

### MEng, Electrical Engineering & Computer Science

National Technical University of Athens

2011 - 2018

Grade: 8.1/10

Thesis: "Resource Management Techniques for Embedded Architectures executing Deep Neural Networks"

Supervisors: Dimitrios Soudris

- I improved GoogleNet's execution time by 16% on Intel's Myriad2 with a state of the art hardware acceleration algorithm.

## PUBLICATIONS

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<b>Go-Oracle: Automated Test Oracle for Go Concurrency Bugs</b> <i>F. Tsimpourlas, C. Rosuero, C. Peng, P. Yang, A. Rajan</i>	2024 ICSE
<b>Deep language models for software testing and optimisation</b> <i>F. Tsimpourlas</i>	2023 PhD Thesis
<b>BenchDirect: A Directed Language Model for Compiler Benchmarks</b> <i>F. Tsimpourlas, P. Petoumenos, M. Xu, C. Cummins, K. Hazelwood, A. Rajan, H. Leather</i>	2022 Arxiv
<b>BenchPress: A Deep Active Benchmark Generator</b> <i>F. Tsimpourlas, P. Petoumenos, M. Xu, C. Cummins, K. Hazelwood, A. Rajan, H. Leather</i>	2022 PACT
<b>Embedding and Classifying Test Execution Traces using Neural Networks</b> <i>F. Tsimpourlas, G. Rooijackers, A. Rajan, M. Allamanis</i>	2021 IET Software
<b>Supervised Learning over Test Executions as a Test Oracle</b> <i>F. Tsimpourlas, A. Rajan, M. Allamanis</i>	2021 SACSE
<b>AITrace: A Deep Learning Recommender for Museum Visitors</b> <i>F. Tsimpourlas, F. Salmouka, M. Markellou</i>	2021 HFRI Greece
<b>A Design Space Exploration Framework for Convolutional Neural Networks Implemented on Edge Devices</b> <i>F. Tsimpourlas, L. Papadopoulos, A. Bartsokas, D. Soudris</i>	2018 CODES+ISSS

## TECHNICAL SKILLS

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<b>Programming Languages</b>	C++, C, Python, Bash, Assembly (x86, ARM, SHAVE-VLIW)
<b>Machine Learning</b>	Pytorch, TensorFlow, WandB, brix, Snowflake
<b>Hardware Description</b>	SystemC, LISA+
<b>Compilers</b>	LLVM, Libtooling, GCC, Clang
<b>Tools</b>	Valgrind, GDB, CMake, Bazel

## ACADEMIC ACTIVITIES

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### Peer Reviews

- **FSE** - Reviewed ML on compiler engineering papers on main conference research track. 2022
- **ASE** - Reviewed ML to software testing papers on main conference research track. 2019
- **PATMOS** - Reviewed hardware acceleration papers for ML. 2018

### Teaching

- Tutor, **Software Testing**, University of Edinburgh. Voted best tutor by students twice. 2019-2022
- Tutor & Marker, **Microprocessors Systems Lab**, NTUA 2017 - 2018
- Teaching Assistant, **Embedded Systems Design**, NTUA 2017 - 2018

### Talks

- **PACT** - Delivered conference presentation for accepted publication as 1st author. 2022
- **HFRI Greece** - As AITrace's research lead, I presented our research roadmap and findings to HFRI's research committee including the Greek Deputy of Culture. 2021
- **SACSE** - Delivered conference presentation for accepted publication as 1st author. 2021

## SCHOLARSHIPS AND AWARDS

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- **HFRI grant no. 00782 for "AITrace" research project.** 2021  
Our research proposal secured €150,000 of research funding. 100 awarded research teams among thousand applicants.
- **PhD scholarship, EPSRC grant EP/L01503X/1.** 2018  
I was 1 of 8 students accepted to "CDT in Pervasive Parallelism" from thousands of applicants.
- **High school award for Panhellenic university entrance exams score.** 2011  
I achieved an average score of 97.48% placing in the top 1% among 90,000 students in the Panhellenic university entrance exams. I was one of very few students nationwide that scored 100% in all 5 science subjects.