Dr Ioannis MAVROMATIS

Principal Research Engineer

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Core Skills

❯ Real-world testbeds: Design & deployment
❯ Cloud-Native: Architectures, tools & application design
❯ Large-scale trials: Prototyping, deployment & evaluation
❯ Networking: OSI Layers 2-7 & wireless standards
❯ Infrastructure: Automation, provisioning, management

❯ Software: Life-cycle, engineering & development
❯ Simulators: Link/system-level & build/test use-cases
❯ 5G Systems, V2X Communications & IoT systems
❯ R&D: Experience on both research & development
❯ Bid Writing

Professional Experience

Industrial & R&D Positions

10/2021 -   **Principal Research Engineer**, *Bristol Research & Innovation Laboratory, Toshiba Europe Ltd.*, Bristol, UK.

❯ **GreenML** - Design and implement energy-efficient ML and FL solutions.
- Power capping optimisation for MLOps deployments.
- Quantisation optimisation for reduced power consumption.
❯ **SYNERGIA** - Design and implement a secure IoT Cloud-native platform.
- Implement a federated identity and access management framework for IoT nodes.
- Develop a Data Drift Detection Framework - Abnormal data, model and firmware Drift Detection.
❯ **UMBRELLA** - Ongoing support on the developed backend / infrastructure - features and software extensions.
- Direct a team of engineers developing frontend/backend microservices.
- Provide technical consultation for external partners - Participate in techno-commercial discussions.
❯ **BEACON-5G** - Implement an IoT API / application marketplace for a 5G-enabled Cloud-native platform.
- Integration with the UMBRELLA platform and network.
❯ **U-CARE** - Design and implement an air quality monitoring solution for care homes.
❯ **Other** - Concept Drift detection and mitigation for large-scale Federated Learning environments.

08/2019 -   **Honorary Research Associate**, *University of Bristol*, Bristol, UK.

❯ Migrate AI-assisted Intelligent Transportation Solutions with Cloud-native and Mobile Edge Infrastructures.

10/2020 -
10/2021   **Senior Research Engineer**, *Bristol Research & Innovation Laboratory, Toshiba Europe Ltd.*, Bristol, UK.

❯ **UMBRELLA** - Directed a team of engineers developing frontend/backend microservices.
- Further developed UMBRELLA's highly-available IoT Cloud-Native Backend platform.
- Further developed the IoT testbed components (IoT node software, communication buses, etc.).
- Implemented the software for various use-cases (street light monitoring, air quality sensing, etc.).
❯ **SYNERGIA** - Designed and implemented a secure IoT Cloud-native platform.

08/2019 -
09/2020   **Research Engineer**, *Bristol Research & Innovation Laboratory, Toshiba Europe Ltd.*, Bristol, UK.

❯ **UMBRELLA** - Architected and implemented a highly-available IoT Cloud-Native Backend platform.
- Developed components of the IoT testbed infrastructure (networking, IoT node software).
❯ **CAVShield** - Led Work Package 2 - Presented findings to funding body and government representatives.
- Architected a Cyber Secure Platform for Cooperative Intelligent Transportation Systems.
❯ **CYTHEMIS** - Improved/demonstrated an end-to-end Intrusion Prevention System.

10/2018 -
08/2019   **Research Associate**, *University of Bristol*, Bristol, UK.

❯ **NG-CDI** - Developed an open-source AI-assisted 5G simulator for C-ITSs (DRIVE framework).
❯ **FLOURISH** - Developed a Fog Computing platform for large-scale connected vehicles experimentation.
- Implemented/deployed a prototyped ITS-G5 testbed. Involved in large vehicular trial campaigns.
- Designed an active jammer - tested performance/disruptions on prototyped ITS-G5 testbed.

02/2016 - 09/2018	**Research Assistant**, *University of Bristol*, Bristol, UK. ❱ **FLOURISH** - Deployed a large-scale ITS-G5 vehicular communications platform. 　　　- Conducted city-wide connected vehicle trials and analysed the experimental data. 　　　- Developed a parallelised (multi-core compatible) version of the OMNeT++ INET framework. ❱ **VENTURER** - "Virtual Driving Testbed" - developed an in-lab testbed for vehicular communications.
04-09/2012	**Network Research Assistant (intern)**, *University Carlos III of Madrid (UC3M)*, Madrid, Spain. ❱ **FLAVIA** - Energy Efficiency improvements for WLAN networks (focus on the IEEE 802.11b/g/n/u). 　　　- Modified IEEE 802.11b/g driver and firmware (within OpenWRT) for improved power consumption.

Networking and IT Positions

05-08/2013 07-10/2008	**IT and Network Support and Consultant**, *"Unifast" Kiriakoulis Georgios*, Thessaloniki, Greece. ❱ Planned, provisioned and deployed IT and networking infrastructure solutions (wired/wireless) for local businesses. ❱ Consultation on Enterprise Resource Planning (ERP) systems. ❱ IT support on Windows- and Unix-based OSs.
07-08/2007	**IT and Network Support and Consultant**, *TITAN Cement*, Thessaloniki, Greece. ❱ Planned, provisioned and deployed IT and networking infrastructure solutions for industrial environments. ❱ Programmed/tested PLC and SCADA automation systems. ❱ IT support on Windows- and Unix-based OSs.

Teaching Assistant / Lab Demonstrator

2014 - 2018	**Teaching Support Assistance**, *University of Bristol*, Bristol, UK. ❱ ∼360 h of teaching in Programming- and Networking-related topics.

Education

10/2014 - 10/2018	**PhD in Communications**, *Dept. of Electr. & Electron. Engineering, University of Bristol*, Bristol, UK. ❱ **1st Year's Research Group Project:** "Localisation Of Strayed Targets (LOST)" (taught phase). ❱ **PhD Title:** "5G Communication Framework for Smarter Autonomous Vehicles" (research phase).
09/2013 - 09/2014	**MSc in "Wireless Communications and Signal Processing"**, *Dept. of Electr. & Electron. Engineering, University of Bristol*, Bristol, UK, *Grade: 68% - Pass with Merit*. ❱ **MSc Thesis:** "Propagation Modelling using Iterative Physical Optics".
05/2007 - 11/2012	**BSc in "Information Technology Engineering"**, *Dept. of Information Technology, ATEI of Thessaloniki*, Thessaloniki, Greece, *Grade: 7.22/10*. ❱ **BSc Thesis:** "Studying Quality of Experience (QoE) over Wireless Networks".

Awards, Patents, Grants & Scholarships

07/2020	**Innovate UK Grant no. 53707**, *£2,177,375*, SYNERGIA Project, Bid Writer.
03/2020	**U.S. Patent**, *US449398*, System and Method for Detecting and Rectifying Concept Drift in Federated Learning *(filed)*.
01-03/2020	**Innovate UK Grant no. 133989**, *£427,480*, CAVShield Project, Work Package Leader, Bid Writer.
05/2019	**IEEE Best Paper Award**, *IEEE Vehicular Technology Conference (IEEE VTC-Spring)*, 2019.
12/2018	**IEEE Popularity Award**, *IEEE Vehicular Networking Conference (IEEE VNC)*, 2018.
09/2014	**Full EPSRC Studentship Funding**, *University of Bristol, UK*.

Technical Skills

Virtualisation:	Docker, Proxmox, Google Cloud Platform (GCP), Amazon Web Services (AWS).
Automation:	Kubernetes (K8s, K3s, MicroK8s), Docker Compose, Serverless (OpenFaas), Vagrant, Ansible.
Programming:	C, C++, MATLAB, Bash, GoLang, Python, HTML, CSS, Javascript, PHP, Java.
Databases:	MySQL, PostgreSQL, InfluxDB, IBM DB2.
Networking:	HAProxy, NginX, Wireshark/Tcpdump, Iperf3, OpenVPN, DHCP, DNS, FTP, LDAP, Nmap.
Monitoring:	Grafana, Prometheus, Elastic, Kibana, Fluentd/FluentBit.

Productivity:	Git, Jira (Scrum, Kanban), Trello, LaTex, MS Office, CI/CD pipelines (TravisCI, Jenkins).
SDRs:	National Instrument's LabVIEW, GNU Radio.
Simulators:	OMNeT++ (including Veins), SUMO, NS-2, NS-3, OPNET.
OSs:	Linux-based Distributions (including kernel and driver programming), OS X, MS Windows.
Video/Image:	Adobe software suite (After Effects, Photoshop and Premiere), GIMP, OmniGraffle.

Personal Development

Training and Certifications

08/2020 **"Kubernetes MasterClass : Kubernetes & Docker Swarm for DevOps"**, Udemy.

08/2020 **"Machine Learning"**, Coursera, organised by Stanford University.

02/2011 **Cisco Certified Network Association (CCNA)**, *Dept. of Information Technology,* ATEI OF THESSALONIKI, Thessaloniki, Greece.

08/2008 **Network Administration Professional Certificate**, *Vellum Global Educational Services,* UNIVERSITY OF CAMBRIDGE, Thessaloniki, Greece.

Summer Schools

06/2018 **"5G V2X Communications Summer School"**, Organised by: King's College London, London, UK..

07/2016 **"Car as a Service - creating tomorrow's smart mobility service platform"**, Organised by: BMW, EURECOM, and Technische Universität München, Tegernsee, Germany..

Volunteering

- Industrial Mentoring Scheme, Faculty of Engineering, University of Bristol.
- Technical Program Committee member and reviewer - several conferences and journals.
- Organisation of the annual "CDT in Communications" conferences.
- Organisation of outreach activities of the University of Bristol for post-16 year old pupils.
- Organisation of Media Days and Public Events for FLOURISH and VENTURER projects.
- SYMβIOSIS - Journalist and event organiser: Anti-racism, multi-cultural environments for the diversity of humans.

Interests & Hobbies

Basketball, Cycling, Video and Photo Editing, Travelling, Sketching, Chess.