Tsvetan I. **Zhivkov**

ROBOTICS · MACHINE LEARNING

London, SW19 1PF, United Kingdom

☐ (+44) 7902444371 | ✉ sgtzhiv@gmail.com | 🏠 tzhivkov.github.io/personal/ | in tsvetan-zhivkov1274

"I am a researcher in agricultural robotics, passionate about artificial intelligence and machine learning."

Experience

Lincoln Agri-Robotics, University of Lincoln
Lincoln, United Kingdom

POSTDOCTORAL RESEARCHER
May 2020 - present

- Integrated a new agricultural weeding robot platform with custom sensors in an industry standard simulator using ROS.
- Integrated of custom LiDAR sensors for UAV crop mapping and ground robot navigation.
- Performed UAV flights for mapping and scanning crops to test machine learning models.
- Set up a robotics arena for teaching and postgraduate research in fleet robotics and agri-robotics.
- Maintained and configured a private 5G network, and designed and configured a WiFi system for robot communication.
- Researched the speed-up of 5G agri-robotics communication and developed code for the analysis of quality-of-service metrics and data representation.
- Liaised in planning and organising of demonstrations and presentations during the Fresh Produce Consortium (the biggest agri-event for the University of Lincoln).
- Held seminars on "*multi-robot system design and implementation*" to postgraduate students.
- Helped secure a proposal of £300,000 for a three-year tree singulation project.

Engineering Department, King's College London
London, United Kingdom

ROBOTICS ENGINEER
Dec. 2019 - May 2020

- Part-time: Tasked with developing custom drivers for specialist robotic hardware; and development and delivery of workshops for robotic applications of specialised multi-sensor perception.

Faculty of Natural & Mathematical Sciences, Graduate Teaching Scholarship, King's College London
London, United Kingdom

TEACHING ASSISTANT
Oct. 2015 - Apr. 2020

- Lab assistant for: 4th year Data Mining (Python), Computer Vision (MATLAB) and Computer Programming for Data Science (Python), 2nd year Database Systems (SQL/SQLite), 1st year Programming Practise & Applications (JAVA)
- Taught tutorials/seminars for: Programming Practise & Applications and Computer Vision.
- Marked assignments, coursework and delivered either written or verbal student feedback for: Programming Practise & Applications, Computer Programming and Data Mining.

Centre for Robotics Research recruitment & outreach, King's College London
London, United Kingdom

DEMONSTRATOR/PRESENTER
Jun. 2016 - Present

- Performed robotic demonstrations for industry professionals and potential students.
- Co-organiser of the 2017 open day for Centre for Robotics Research (CoRe) group.

Summer Internship on Data Capture, University of Liverpool
Liverpool, United Kingdom

APPLICATION DEVELOPER
Jun. 2014 - Sep. 2014

- Tasked with researching means of retrieving text and image data from users who are operating mobile devices (iPad).
- Designed a prototype application that enabled users to take photographs, annotate them and leave comments.
- Implemented a method for the application to store data locally on the device and allow multi-platform data retrieval for further analysis.

Education

King's College London　　　　　　　　　　　　　　　　　　　　　　　*London, United Kingdom*

PHD (GRADUATE TEACHING SCHOLAR) IN COMPUTER SCIENCE　　　　　　　　　　　　*Sep. 2015 - Mar. 2020*

- **Research Title:** A Multi-Robot Communication Framework for the Analysis and Mitigation of Network Perturbations.
  - Investigated the impact of disrupted communication on multi-robot teams.
  - Evaluated simulated and physical robot empirical results, using a large collection of performance metrics.
  - Developed algorithms to mitigate detriments (failure) indicated by the performance metrics.
- **Research Field(s):** Multi-robot systems, communication-based control, agent behaviour.

University of Liverpool　　　　　　　　　　　　　　　　　　　　　　　*Liverpool, United Kingdom*

MENG IN COMPUTER SCIENCE AND ELECTRONIC ENGINEERING　　　　　　　　　　　　*Sep. 2011 - Jul. 2015*

- **Fourth year group project:** Robot Object Search and Retrieval Team - Developed an application to improve human-robot interaction.
- **Third year project:** Multistage Electromagnetic Projectile Accelerator.

Publications

The need for speed: How 5G communication can support AI in the field　　　　　*Virtual*

PRESENTED AT UKRAS21 CONFERENCE: ROBOTICS AT HOME　　　　　　　　　　　　*Jun. 2021*

A multi-robot communication framework for the analysis and mitigation of network perturbations　　　　　　　　　　　　　　　　　　　　　　　*King's College London*

PHD THESIS　　　　　　　　　　　　　　　　　　　　　　　　　　　　　*Jul. 2020*

Modelling variable communication signal strength for experiments with multi-robot teams　　　　　　　　　　　　　　　　　　　　　　　*Lincoln, United Kingdom*

PRESENTED AT UKRAS20 CONFERENCE: ROBOTS INTO THE REAL WORLD　　　　　　　　*May 2020*

MRComm: Multi-Robot Communication Testbed　　　　　　　　　　*London, United Kingdom*

PRESENTED AT THE 20TH TOWARDS AUTONOMOUS ROBOTIC SYSTEMS CONFERENCE　　　　*Jul. 2019*

Establishing Continuous Communication through Dynamic Team Behaviour Switching　　　　　　　　　　　　　　　　　　　　　　*Loughborough, United Kingdom*

PRESENTED AT THE 2ND UK-RAS19 CONFERENCE ON EMBEDDED INTELLIGENCE: ENABLING & SUPPORTING RAS TECHNOLOGIES　　　　　　　　　　　　　　　　　　　　　　　*Jan. 2019*

Measuring the Effects of Communication Quality on Multi-Robot Team Performance　　　　　　　　　　　　　　　　　　　　　　　*Surrey, United Kingdom*

PRESENTED AT THE 18TH TOWARDS AUTONOMOUS ROBOTIC SYSTEMS CONFERENCE　　　　*Jul. 2017*

Skills and interests

RELEVANT SKILLS

Programming	Python, C++ and MATLAB (in order of knowledge/expertise).
Software	Git (version control), Latex and Microsoft Office.
Frameworks	Robot Operating System (ROS) and scikit-learn (Python machine learning library).
Operating Systems	Linux (Ubuntu), Microsoft Windows and Mac OSX.

HOBBIES AND INTERESTS

Computer building	Passionate about building computers and keeping up to date with current technology trends and news.
Fitness	Regularly indulge in fitness activities including weightlifting, bouldering and tennis.
Board games	Board game lover who frequently meets with friends to play a large variety of games, including DnD.