Pavel Petráček

PhD in Autonomous Robotics

Robotics R&D Lead @ Fly4Future
Researcher @ Multi-Robot Systems

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Link to academic CV
Google Scholar

About me

Robotics R&D engineer and team lead with 10 years of hands-on experience in autonomous UAV systems, multi-robot coordination, and robotics for real-world applications. Experienced in taking research from concept to deployment in high-impact environments like subterranean S&R and heritage preservation. Technical expert with strong academic background and project leadership.

Fast learner open to new things.

Core skills

GNSS-denied robot autonomy
SLAM, 3D mapping, perception
Embedded systems, sensor fusion
Real-time system integration
C++, Python, ROS, PX4, git
Multi-agent systems
Technical and R&D leadership

Languages

Czech (native)
English (fluent)

Experience

Fly4Future s.r.o. *2023–Present*
R&D Projects Lead & Developer
- Leading robotics R&D team of 6 in solving real-world challenges
- Hands-on approach to development and experimentation

Multi-Robot Systems @ CTU *2016–Present*
Researcher & Developer
- Fundamental research and its transfer to practice
- Projects leadership, students mentoring, international cooperation, public demos, teaching
- Open-source contributor (**MRS UAV System**)

CertiCon a.s. *2016–2017*
Software Tester
- Learned corporate workflows & developed automated tests

Selected projects

DARPA Subterranean Challenge (link)
- Subterranean search & rescue with autonomous robot teams
- Responsible for system design, GNSS-denied autonomy, mapping, SLAM, experimentation, integration, and deployment of UAVs
- Winning $1M while competing with Caltech, MIT, ETH Zürich, ...

Dronument (video)
- Documenting interiors of historical monuments with an autonomous multi-UAV team
- Achieved reliable operation and deployed the autonomous system in 20 sites (incl. 2 UNESCO sites)

Multi-UAV swarming (video)
- Deployed first fully-decentralized swarms w/o communication

DOFEC (video)
- Designed onboard fire detection & localization with autonomous mission execution and fire extinguishment

Education

PhD, Autonomous Flying Robotics CTU, 2019-2024
- Topic: UAV autonomy in perception-degraded settings (**pdf**)
- Numbers: 19 publications; h-index 9 (WoS), 15 (GScholar)

BSc & MSc, Cybernetics CTU, 2014-2019

Honors & Awards

Werner von Siemens prize (web, video) 2025
- #1 dissertation out of all (243) 2023-2024 STEM works in Czechia

Best paper award at IEEE RA-M (web, paper) 2025
- Robotics & Automation Magazine award for our **Dronument** work

Dean's prize (link) 2024
- My dissertation selected in top 2 works at FEE CTU that year

Czech National Excellence Award M17+ 2022
- Excellent international evaluation of our Dronument solution (link)

Dean's prize 2017, 2019
- BSc and MSc theses selected in top 1% at FEE CTU