Kuat Telegenov

Robotics Research Engineer

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PROFESSIONAL EXPERIENCE

KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY (KAUST)   Saudi Arabia

Research Specialist   FEB 2018 - Present
- Assisted the development of a towed underwater coral reef monitoring robotics system, including circuit design, sensors and hardware integration, and software development.
- Led the KAUST team at European Robotics League (ERL) autonomous competition, earning Best Aerial Performance award.
- Finalist in Taqadam startup accelerator with autonomous drone delivery company.
- Collaborated with research groups to enhance experiments using autonomous drones and underwater remotely operated vehicles (ROV).
- Worked on physical robotics systems, software deployment, testing, and hardware integration.
- Prototyped and developed robot mechatronics systems.
- Developed and maintained robotics software using Robot Operating System (ROS2) and PX4 Autopilot Firmware.
- Instrumented students and postdocs research endeavors.
- Managed laboratory equipment, procured supplies, and ensured proper maintenance.
- Oversaw lab inventory, established documentation, and enforced best lab practices.
- Managed lab operations and liaised with internal and external vendors.

NAZARBAYEV UNIVERSITY   Kazakhstan

Instructor   AUG 2015 - Jan 2018
- Lectured Mechanical Design and Computer Aided Drawing courses for first and third-year robotics students, designed the industry-aligned course materials.
- Supervised final-year undergraduate capstone projects.

Research Assistant   AUG 2013 - Aug 2015
- Researched robotics, mechatronics, control, and parallel mechanisms.
- Designed the structure and controller for underactuated mechanisms for industrial robotic end effectors and upper limb prosthetic fingers.

Teaching Assistant & Project Administrator   FEB 2012 - Aug 2013
- Conceptualized Nazarbayev University Research Park, assessed market conditions, and formulated incentives for potential residents.
- Oversaw contract research collaborations between University faculty and national companies.
- Directed laboratory sessions for Physics foundation students.

EDUCATION

L.N.GUMILYOV EURASIAN NATIONAL UNIVERSITY   Kazakhstan
Master of Science, Mechanics   2012-2014

UNIVERSITY OF TECHNOLOGY MALAYSIA   Malaysia
Bachelor of Engineering, Mechanical Engineering (Aeronautics)   2008-2012

TECHNICAL SKILLS

Strong theoretical and technical experience including
- Classical control, aerodynamics, structures, flight mechanics, finite-element modeling.

Prototyping and hands-on experience including
- 3-D Modeling, additive manufacturing, CNC machining, and manufacturing tools such as milling, lathe and drill press.
- UAV platforms: simulation, control and application.
- Integration of existing hardware into the autonomous systems: sensors, actuators, vision and perception.
- Experience designing, building and instrumenting small UAVs and ROVs capable of carrying out fully autonomous functions.

Embedded systems & instrumentation experience including
- Experience with object-oriented programming C++/Python, ROS2, Docker and version control tools.
- Experience in hardware selection, networking, and hardware communication.

- Experience with vehicle design/selection, actuator design/selection, electronic system design.
- Experience in PCB design using Autodesk Fusion 360, including Gerber file export for manufacturers.

Expert user of the following engineering software
- SolidWorks, Fusion 360, Ansys, Matlab.

Entry-level user of the following full-stack development tools
- HTML5/CSS, JavaScript, MongoDB, Express, React, Node.

Certifications
- The Complete Web Development Bootcamp, Angely Yu, Udemy. 2023
- Aerial Robotics Course, Vijay Kumar, UPenn, Coursera. 2022
- Self-Driving Cars with ROS2 and Autoware, Apex.AI. 2020
- Deep Learning Specialization (5 courses), Andrew Ng, deeplearning.ai at Coursera. 2020
- Summer School on Multi-Robot Systems, Martin Saska, CTU, Prague. 2019
- Game theory and Distributed Control, Jeff Shamma, European Embedded Control Institute. 2019
- CS50x Introduction to Computer Science, David J. Malan, Harvard University, Coursera. 2014
- MITx 6.00.1x Introduction to Computer Science and Programming Using Python, MIT, edX. 2014

AWARDS

- "Best Aerial Team" award in the European Robotics League team competition, Seville, Spain 2019
- "European GNSS agency special prize" award in the European Robotics League team competition, Seville, Spain 2019
- "Bolashak" President's Scholarship award to study abroad, Astana, Kazakhstan 2008

LEADERSHIP & EXTRA CURRICULAR ACTIVITIES

- Leader of a multidisciplinary team to participate in the international robotics competition. 2019
- Member of the judge panel for NASA Mars Habitat Design at KAUST for Saudi high school students. 2022
- Member of the judge panel for summer research projects for Saudi talented high school students. 2023

LANGUAGES

- English (Full professional proficiency)
- Russian, Kazakh (Native or bilingual proficiency)
- Turkish (Limited working proficiency)

PUBLICATIONS

- Y. Marani, **K. Telegenov**, E. Feron and M. Kirati, Drone reference tracking in a non-inertial frame using sliding mode control based Kalman filter with unknown input, 2022 IEEE Conference on Control Technology and Applications, 2022.
- Y. Marani, **K. Telegenov**, E. Feron and M. Kirati, Drone reference tracking in a non-inertial frame: control, design and experiment, 2022 IEEE AIAA 41st Digital Avionics Systems Conference, 2022.
- Z. Akhter, R. M. Bilal, **K. Telegenov**, E. Feron and A. Shamim, Indigenously Developed HD Video Transmission System for UAVs Employing a 3x3 MIMO Antenna System, in IEEE Open Journal of Antennas and Propagation, 2022.
- A. Kaidarova, M. T. Vijjapu, **K. Telegenov**, A. Przybysz, K. N. Salama and J. Kosel, Enhanced Graphene Sensors via Multi-Lasing Fabrication, IEEE Sensors Journal, 2021.
- Xiaobin Sun, Meiwei Kong, Omar A Alkhazragi, **Kuat Telegenov**, Mustapha Ouhssain, Mohammed Sait, Yujian Guo, Burton H Jones, Jeff S Shamma, Tien Khee Ng, Boon S Ooi, Field demonstrations of wide-beam optical communications through water–air interface, IEEE Access Journal, 2020.
- N. Omarkulov, **K. Telegenov**, M. Zeinullin, I. Tursynbek, A. Shintemirov, Preliminary Mechanical Design of NU-Wrist: a 3-DOF Self-Aligning Wrist Rehabilitation Robot, 6th IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics, 2016.
- **K. Telegenov**, Y. Tlegenov, S. Hussain, A. Shintemirov, Preliminary Design and Analysis of a Three Finger Underactuated Adaptive End Effector with a Breakaway Clutch Mechanism, Journal of Robotics and Mechatronics, 2015.
- N. Omarkulov, **K. Telegenov**, M. Zeinullin, A. Begalinova, A. Shintemirov, Underactuated Anthropomorphic Finger Design and Analysis for Hand Prosthetics, 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2015.
- **K. Telegenov**, Y. Tlegenov, A. Shintemirov, A Low-Cost Open-Source 3-D Printed Three-Finger Gripper Platform for Research and Educational Purposes, IEEE Access Journal, 2015.
- **K. Telegenov**, Y. Tlegenov, A. Shintemirov, An Underactuated Adaptive 3D Printed Robotic Gripper, 10th France - Japan Congress, 8th Europe - Asia Congress on Mecatronics, 2014.
- Y. Tlegenov, **K. Telegenov**, A. Shintemirov, An Open Source 3D Printed Underactuated Robotic Gripper, The 10th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications, 2014.