

ULUBILGE ULUSOY, PH.D.



Human factors engineer specializing in AI-enabled crew support. Dedicated to designing, evaluating, and advancing human-centered systems in high-risk, high-stakes environments. Skilled in leveraging experimental testing and data-driven insights to optimize performance, safety, and mission success.

CONTACT

- ✉ ulubilgeulusoy@gmail.com
- ☎ (323)-690-0983
- 📍 5863 Arapahoe Ave, Boulder, CO.
- 📁 Portfolio
- 🐙 GitHub Profile
- 🌐 LinkedIn Profile
- 📄 Publications

EDUCATION

- Ph.D., Astronautical Engineering
University of Southern California (USC)
GPA: 3.90/4.00 • Year: 2025
- M.S., Astronautical Engineering
University of Southern California (USC)
GPA: 3.92/4.00 • Year: 2020
- B.S., Astronautical Engineering
Istanbul Technical University (ITU)
GPA: 3.70/4.00 • Year: 2018

EXPERTISE

- Human Factors Engineering
- Human-AI Interaction
- Human Subjects Research
- Human-in-the-Loop Testing
- IRB Protocol Management
- Simulated Crew Operations and Training
- Human-Robot Interaction
- AI-Augmented Development

AWARDS & HONORS

- Young Pioneer Award, Finalist, IAF (2024)
- Best Research Assistant, USC (2022)
- Rocket Scientist of the Year, USC (2020)

GRANTS & FELLOWSHIPS

- NASA STRI, HOME (2021-2025)
- USC Viterbi Grad Fellowship (2020-2021)

STACK

- Python (OpenCV, PyQt, Tkinter)
- C++ (ViSP)
- BIOPAC
- Lab Streaming Layer
- MATLAB & R
- Qualtrics
- LaTeX
- Open Broadcaster Software

LANGUAGE

- English (Fluent)
- Turkish (Native)

PROFESSIONAL EXPERIENCE

- 📅 07/2025 - Present
📍 **University of Colorado Boulder** Postdoctoral Associate
 - Leading end-to-end experimental protocol design and execution for a human-robot interaction study investigating the utilization of robots to support astronauts during maintenance operations.
 - Developed Franka Research 3 robot arm capabilities for real-time, co-located human-robot task execution, including Python-based kinesthetic teaching and C++/ViSP-based visual servoing, with collision detection and joint-limit safety features.
 - Developed a GUI (Tkinter) in Python for remote controlling the FR3 capabilities (moving arm and gripper by using kinesthetic teaching and visual servoing) via X-server (X11).
 - Established data collection and processing pipelines for physiological (BIOPAC ECG and respiration), computer vision (facial impressions), and survey-based (Qualtrics) measures.
 - Developed Lab Streaming Layer (LSL) applications in Python to synchronize physiological, computer vision, and behavioral data streams.
 - Developed GUIs (Tkinter) in Python for data visualization, as well as data analysis scripts for the collected data.
 - Designed an ecologically valid space habitat maintenance scenario with associated experimental layouts, session workflows, and participant training protocols.
- 📅 08/2020 - 05/2025
📍 **University of Southern California** Research Assistant
 - Conducted human factors research funded by NASA and advised by former NASA astronaut Professor Garrett E. Reisman for 5-years on integrating AI into crew operations.
 - Led end-to-end experimental protocol design, IRB process management and experiment execution in two separate occasions for human-AI interaction studies involving 60 participants.
 - Designed experimental layouts, session workflows, and participant training protocols for these experiments and trained 60 participants to perform a simulated space habitat maintenance task during experimental sessions.
 - Rehearsed training and operational protocols for experiments with former NASA astronaut Garrett Reisman.
 - Built computer vision-based applications (OpenCV) in Python for data collection; performed statistical analysis in MATLAB and R.
 - Conducted a survey study with ten former astronauts, collecting quantitative and qualitative data to characterize interaction dynamics between astronauts and mission control during maintenance operations and to inform AI integration into crew operations.
 - Performed comprehensive literature reviews on human factors metrics and human spaceflight operational and training procedures.
- 📅 11/2019 - 11/2020
📍 **USC Liquid Propulsion Laboratory** Lead Engineer
 - Managed a nonprofit academic propulsion group, leading 40+ students and overseeing an annual budget of approximately \$60k.
 - Led statement-of-work development and coordinating with University Corporate Relations to launch the sponsored research collaboration.
 - Managed end-to-end project execution for the design of a liquid rocket engine test stand in collaboration with Pangea Propulsion, serving as project coordinator overseeing timelines, deliverables, and technical alignment.
 - Implemented industry-aligned organizational and technical operating standards across laboratory activities.
 - Coordinated with USC Environmental Health & Safety (EH&S) to establish testing protocols and COVID-era operational procedures.
 - Defined high-level project goals for the design and testing of rocket engines and feed systems.