

Agricultural Biological Cognitive Robotics Initiative



***ABC Robotics - ADI-Negev call for research proposals in the field of
"Closed Loops and Robotics in Neuro-rehabilitation."***

BGU is happy to announce a new call of the ABC Robotics Initiative

The initiative aims to advance collaborative and applicative/translational robotics research in the field of Neuro-rehabilitation at the Negev Lab, a joint venture of BGU and Adi-Negev Nahalat Eran.

BGU and the Adi Negev-Nahalat Eran Rehabilitation Village have established a translational interdisciplinary laboratory focusing on leveraging neuroscience and rehabilitation research propel rehabilitation services to a new level. The aim of Negev Lab is to foster multi-disciplinary research driven by both basic science and patients' unmet needs, advancing neurorehabilitation and maximizing the physical and cognitive potential of people suffering from brain damage and motor disabilities. The goal of ABC Robotics is to advance innovative multidisciplinary robotics research at BGU in the domains of agricultural, biological and cognitive robotics. The ABC Robotics Initiative is driven by a vision and a commitment for collaboration and interdisciplinary research. By bringing together researchers from different disciplines, we aim to spark new ideas and research directions.

This joint call of ABC Robotics & the Negev Lab focuses on (i) research and development of closed-loop systems, including mechanical design, actuator technology, control systems, sensor systems, and machine learning methods for neurorehabilitation. (ii) utilization of closed-loop and robotic technologies to rehabilitate persons with motor disabilities. The closed-loop/robotics technologies should include obtaining biological signals from the rehabilitated person to adjust their operation and enrich the rehabilitative experience. The proposal should focus on the main themes of pending calls of the Innovation Authority (Bio-Convergence, Nanomedicine).

This call will support translational/applied robotics research and development for neuro-rehabilitation. Translational research refers to the "translation" of basic scientific findings in a lab setting into potential closed-loop/robotic technology or application. The ideas/technologies developed under this initiative must be validated in the Negev Lab environment (corresponding to TRL levels 3-4 of Horizon2020 framework).

ABC and Negev Lab will fund up to two proposals in the total amount of \$60,000 (each project can submit proposals for budgets between 10,000-20,000 per year). The project will be funded for one year and will be granted extension after proof of project feasibility and student recruit.

During the course of the program, the RDP will be required to submit annual reports which will be reviewed. Researchers and students will be expected to actively participate in the ABC Robotics monthly seminars and in the annual ABC Robotics conference, present work at international conferences (ABC robotics initiative will financially assist in supporting student participation in international robotics conferences), submit publications to leading robotics journals, host lab visits, update the website and leverage the proposed research to attract additional funds.

Researchers are obliged to present/publish in robotics and neurorehabilitation engineering-related avenues and ensure the leveraging of funds.

The RDP will be reviewed by both external and internal reviewers.
Winning projects will be announced at the beginning of the upcoming academic year.

Proposals can be submitted and led by any full time BGU Faculty Member*

This call is open for PIs that the Negev lab does not currently support.

Deadline for submission: July 30, 2021

*each researcher can submit one proposal as PI, however can collaborate in other proposals.

Please submit a 3-year research proposal* in English which details the following:

- Research Innovation – contribution beyond State of the Art
- Research objectives
- Compliance with listed above domains of Cognitive Robotics and the focus on translational/applied research
- Three-year detailed research plan, indicating timetable, tasks, milestones and responsibilities.
- List of participating researchers, indicating specifically the contribution and involvement of the Principal Investigator and each researcher.
- Previous success of researchers (collaborations, research funds, publications).
- Achievements of previous RDP (if relevant).
- Tasks for each of the graduate students and funding sources.
- Potential for industrial application (IP) if exists.
- Support letter from stakeholders if relevant.
- International collaborations if exist and matching funds/expertise provided.
- Budget details and justification.
- Specific plans and timetable to submit the proposal to other competitive funding agencies (specify fund name/s, e.g., MOST/BSF/GIF/DFG/EU/Innovation Authority) and/or specific international funded collaborations (including cooperative research students).
- Optional matching funds.

*up to 4 single spaced pages, Font 12.

In addition, each PI should submit brief CV including description of main expertise/lab activities (4-5 lines) and robotics publications and research grants in last 10 years. One page of preliminary results can be added if needed. Preference will be given to proposals received from new BGU faculty, international collaborations, and projects supported by industry or other stakeholders (support letter must be added to the proposal). Please contact Danny Shtaiar of BGU Negev for industry support dshtaiar@bgu.ac.il.

All submissions and enquiries should be sent to: abc-robotics@bgu.ac.il

Yael Edan
Director, ABC Robotics Initiative

Simona Bar-Haim
Director, Neuro-rehabilitation at the Negev Lab

Appendix 1: Technology Readiness Levels (TRL)

TRL 1 – basic principles observed

TRL 2 – technology concept formulated

TRL 3 – experimental proof of concept

TRL 4 – technology validated in lab

TRL 5 – technology validated in relevant environment (industrially relevant environment in the case of key enabling technologies)

TRL 6 – technology demonstrated in relevant environment (industrially relevant environment in the case of key enabling technologies)

TRL 7 – system prototype demonstration in operational environment

TRL 8 – system complete and qualified

TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)



www.bgu.ac.il/abc-robotics