RCDS: the Robotics, Control, and Decision Systems Laboratory, Competence Centre and Digital Innovation Hub

Mechanical Engineering and Materials Science and Engineering
Cyprus University of Technology

Dr. Savvas G. Loizou

RCDS Director, Assistant Professor

Τεχνολογικό
Πανεπιστήμιο
Κύπρου

Robotics
Control
Decision Systems
LAB • CC • DIH

Cyprus University of Technology

- Established by law in 2003, started operation in 2007

- Public University

- 6 faculties

  - Geotechnical Sciences

  - Management and Economics

  - Communication and Media

  - Health Sciences

  - Fine and Applied Arts

  - Engineering and Technology

- 3000+ students, 400+ faculty members, 200+ administrative stuff

- Ranked as one of the top young Universities regarding research and innovation

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Robotics, Control and Decision Systems

- First robotics laboratory in Cyprus
    - Established in 2011 by Dr. S.G. Loizou
- Developed externally funded projects worth more than 26 M€
- Facilities to support activities in multiple fields of Robotics
- Personnel
    - 1 Faculty member
    - 3 Post-Doctoral Associates
    - 3 PhD students
    - Multiple thesis students, visiting researchers

Τεχνολογικό
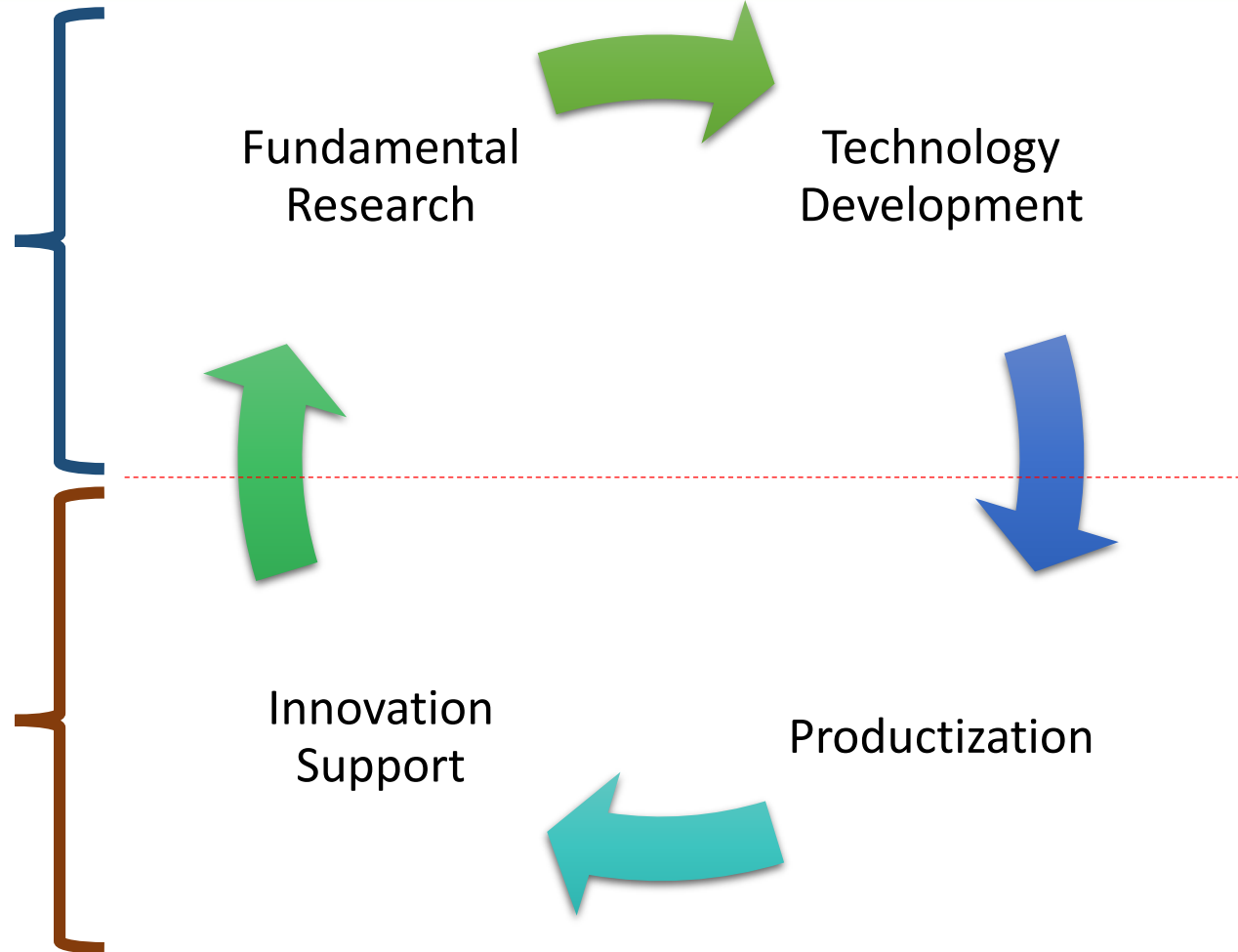Πανεπιστήμιο
Κύπρου

What We Do
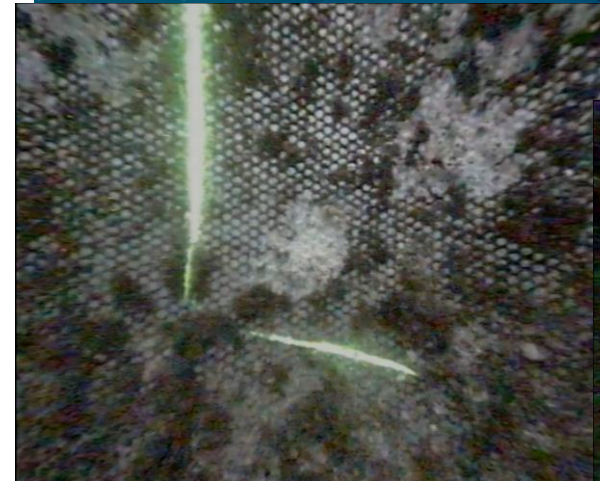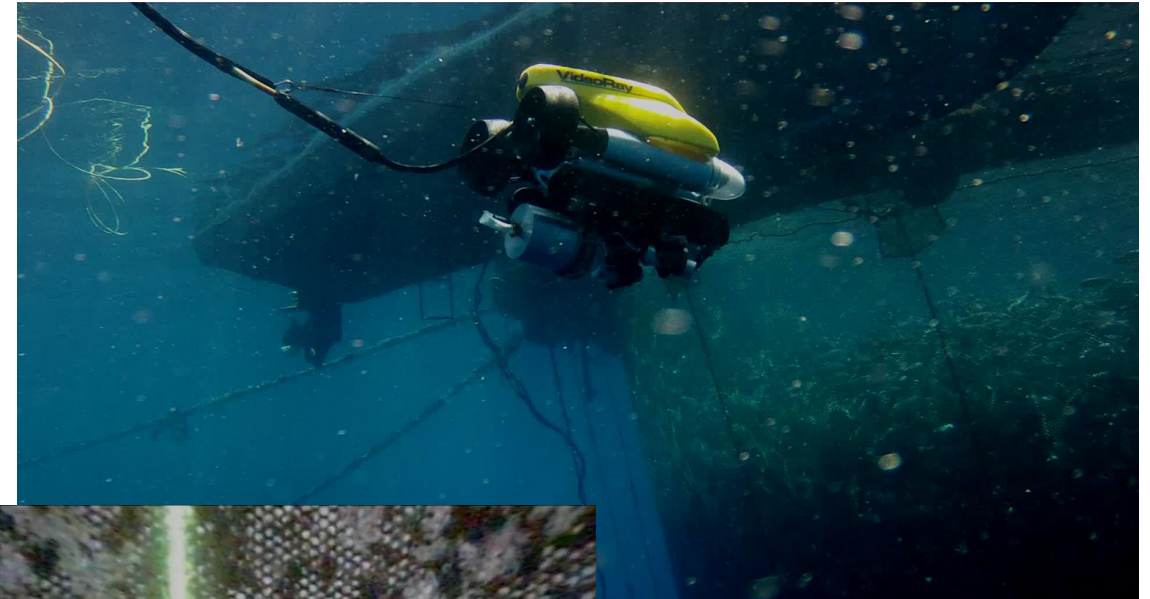
Basic Research

- (Multi-)Robot Navigation – Coordination – Control
  - Navigation Functions
  - Density Functions
  - Navigation Transformation

- Motion Task Planning
  - Automatic Controller Synthesis
  - Combining Formal Methods and Control Systems
  - Hybrid Systems

Business

- Consulting

  - Companies of all sizes (local and international)

- Product development

  - Develop solutions to industrial needs

- Commercialization

  - Help startups develop their products and introduce them to the markets

  - Working to commercialize our own products

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Robotics
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Applied Research and Technology Development

- Underwater Robotics

  - Navigation/Coverage

  - Modelling

  - Control (including HIL)

  - Localization

  - Application:
    - Offshore aquaculture I&M
    - Ship hull I&M
    - Offshore infrastructure I&M

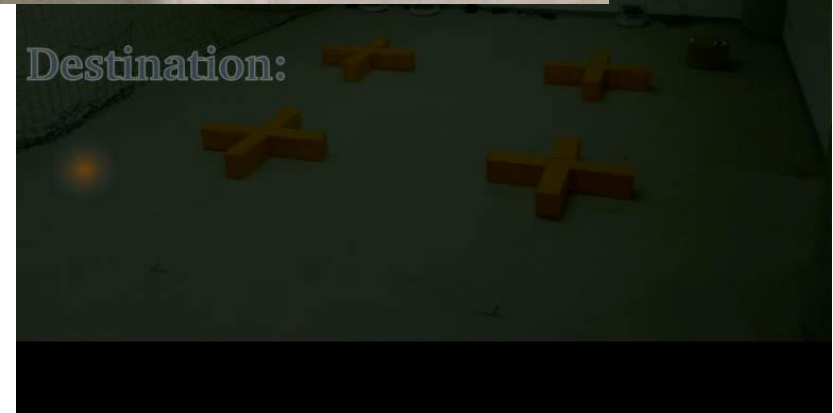## Applied Research and Technology Development

- Underground Robotics

  - Control for coverage

  - Control for connectivity in NLOS communication environment

  - Navigation

  - Application:
    - Sewer network I&M
    - Pipeline I&M
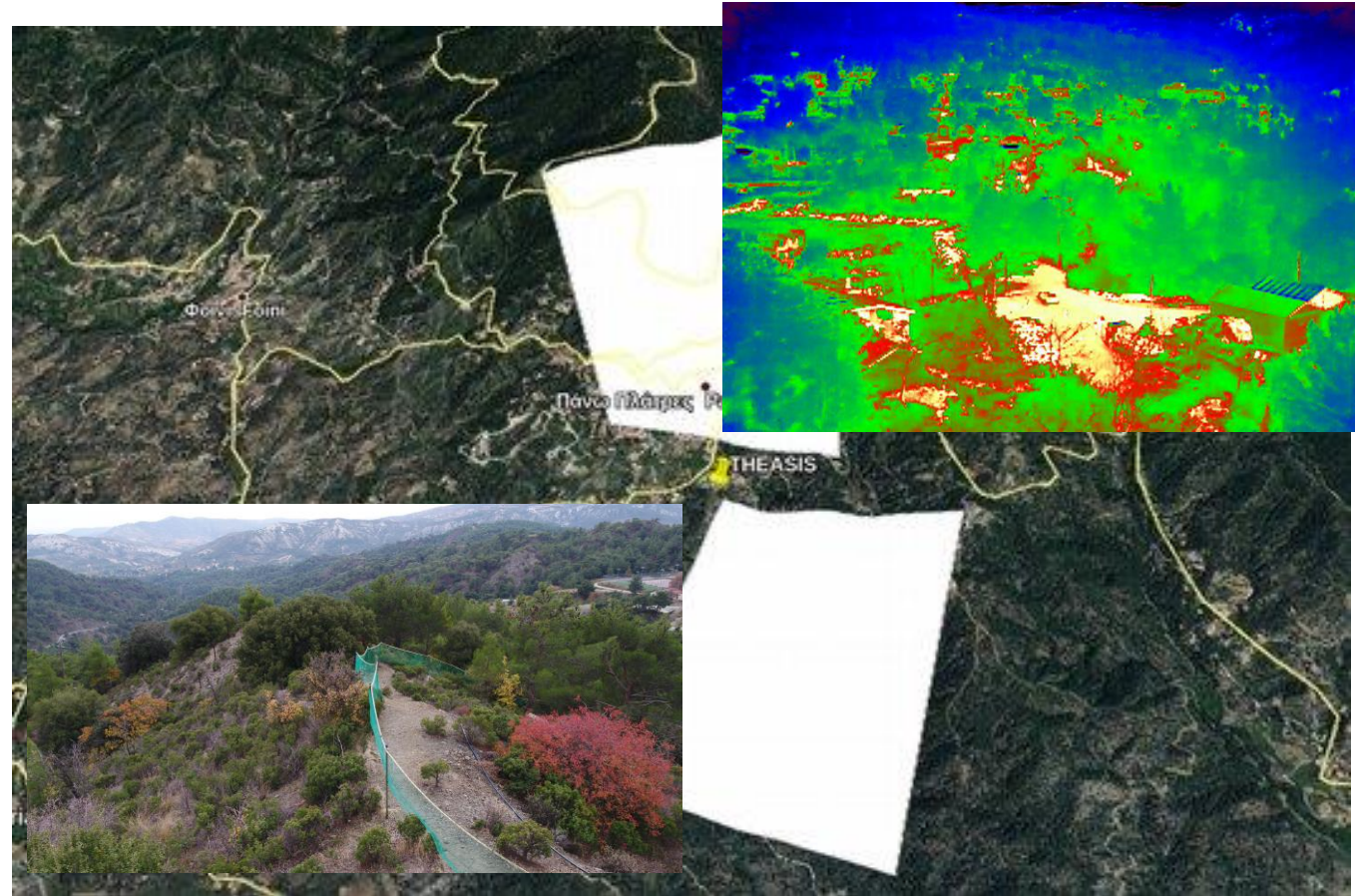
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Applied Research and Technology Development

- Mobile Robotics

  - Navigation

  - Localization

  - Motion Task Planning

  - Application:
    - SME Factory Logistics
    - Seaport/airport Logistics

Destination:

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Applied Research and Technology Development

- Aerial Robotics

  - Decision fusion

  - Control for coverage

  - Application:
    - Early forest fire detection system
    - Situational awareness
    - Aerial I&M
    - Logistics
    - Environmental management

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Collaboration Opportunities

- Basic Research
- Applied Research
- Technology development
- The RCDS will evolve into the Robotics Unit of CMMI (under negotiations)
  - A €52M investment in marine and maritime technologies
- Shipping
- Offshore infrastructure
- Aquaculture
- Logistics
- Seaports/airports
- SAR/observation systems
- I&M