

## Program DISC Summer School

Planning, Learning and Control of Multi-Robot and Multi-Agent Systems

3 days Online + 1 day [Domstad Utrecht](#)

8<sup>th</sup> June – 11<sup>th</sup> June, 2021

Organizers: J. Alonso-Mora (TUD), O. Arslan (TU/e) and M. Cao (U. Groningen)

### Tuesday 8<sup>th</sup> June 2021 [ONLINE]

|               |                          | Who          | Title  |
|---------------|--------------------------|--------------|--|
| 08.45 – 9.00  | Opening                  | Organizers   | Opening Summer School - Introduction                               |
| 09.00 – 10.00 | Lecture                  | M. Dorigo    | Improving controllability, robustness and security of robot swarms |
| 10.00 – 12.00 | Lecture (w/ breaks)      | JJ. Chung    | Learning to Coordinate   |
| 12.00 – 13.00 | Lunch break              |              |  |
| 13.00 – 14.00 | Short presentations      | Participants |  |
| 14.00 – 14.30 | Coffee-break interaction |              |  |
| 14.30 – 15.30 | Short presentations      | Participants |  |
| 15.30 – 16.00 | Coffee-break interaction |              |  |
| 16.00 – 17.00 | Lecture                  | D. Rus       | MRS Control  |

### Wednesday 9<sup>th</sup> June 2021 [ONLINE]

|               |                      | Who            | Title   |
|---------------|----------------------|----------------|---|
| 09.00 – 10:00 | Lecture              | D. Dimarogonas | Multi-robot task planning and control under spatiotemporal specifications     |
| 10.00 – 12.00 | Lecture (w. breaks)  | E. Montijano   | Distributed Estimation Using Consensus Methods                                |
| 12.00 – 13.00 | Lunch break          |                |   |
| 13.00 – 14.00 | Lecture              | B. Besselink   | Performance of MAS: string stability of vehicle platoons                      |
| 14.00 – 15.30 | Group work           |                | Assignment 1 by E. Montijano  |
| 15.30 – 16.30 | Lecture              | N. Leonard     | Opinion Dynamics for Decision Making and Learning in Multi-agent Interactions |
| 16.30 – 17.30 | Discuss assignment 1 | E. Montijano   |   |

### Thursday 10<sup>th</sup> June 2021 [ONLINE]

|               |                      | Who           | Title  |
|---------------|----------------------|---------------|--|
| 09.00 – 10:00 | Lecture              | S. Grammatico | Monotone game theory for multi-agent dynamical systems |
| 10.00 – 12.00 | Lecture (w. breaks)  | D. Halperin   | Motion Planning for Teams of Robots: A Digest          |
| 12.00 – 13.00 | Lunch break          |               |  |
| 13.00 – 14.00 | Lecture              | F. Oliehoek   | Decision-making  |
| 14.00 – 15.30 | Group work           |               | Assignment 2 by D. Halperin                            |
| 15.30 – 16.30 | Lecture              | V. Kumar      | Swarms of Small, Flying Robots                         |
| 16.30 – 17.30 | Discuss assignment 2 | D. Halperin   |  |

### Friday 11<sup>th</sup> June 2021 [UTRECHT]

|               |                        | Who     | Title  |
|---------------|------------------------|---------|--|
| 10.00 – 10:30 | Arrival/check in       |         |  |
| 10.30 – 11.30 | Lecture                | M. Mazo | Analysis and Design of Stymergy-based Multi-agent Systems        |
| 11.30 – 13.30 | Lunch & interaction    |         |  |
| 13.30 – 14.30 | Lecture                | Z. Sun  | Distributed and cooperative coordination of multiple UAV systems |
| 14.30 – 15.15 | Discussion             | all     | Discussion, take aways, future, etc                              |
| 15.30 – 17.00 | Drinks and interaction |         | Drinks at the " <a href="#">Muntgebouw</a> ", Utrecht            |