

Transdisciplinary approaches in emerging engineering problems

Organizers:

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From the perspectives of control engineering and different applications, transdisciplinary design, analysis, and implementation of advanced systems have drawn strong attention in both theoretical and practical studies in recent years. The complexity of problems and challenges that scientists are facing in these areas has highly increased, while the necessary knowledge and understanding required to tackle these problems has been evolving rapidly. Furthermore, the involvement of multiple, very different, domains with enhanced ranges of variety require multiple methods to be used. To deal with such challenges, new approaches such as a transdisciplinary approach are necessary. A transdisciplinary approach requires not only technical disciplines to interact, but also interaction with life sciences.

This special session aims to focus on design challenges and methods associated with implementing emerging trends for industrial and life science applications. We welcome researchers and practitioners to share their novel and innovative research contributions that fall within this scope. List of topics of interest include, but are not constrained to the following:

- AI enabled intelligent engineering applications
- Control engineering in medicine
- Advanced control methods
- Trends in control engineering
- Transdisciplinary design
- Life science applications

The list of possible contributions to this Special Session is:

1. Cristian Ciorcaș, Mircea Șușcă, Quantization Analysis for Servo Control of CNC Machines
2. Andrei Alexandru Tulbure, Cosmin Covaciu, Adrian Alexandru Tulbure, Eva H. Dulf
Novel defect tracking using DeepSORT, ScaledYOLOv4 and the Clip model
3. Daniel D. Timis, Clement Festila, Inflight battery charger for a survey quadcopter
4. Erwin T. Hegedus, Isabela Birs, Mihaela Ghita, Clara Ionescu, Cristina I. Muresan,
Optimal Fractional Order PID for Hypnosis Induction and Maintenance
5. Marcell Szanto, Gergo Strasser, Laszlo Szasz, Lehel Denes-Fazakas, Levente Kovacs,
Gyorgy Eigner, Gabor Kertesz, Utilization of IMU-based gesture recognition in the
treatment of diabetes

6. Bence Czako, Daniel Andras Drexler, Levente Kovacs, Control of a T1DM model using Robust Fixed-Point Transformations based control with disturbance rejection
7. Ioana Nascu, Daniel Sebastia-Saez, Ioan Nascu, Wenli Du, Advanced Control Strategies for a Perfusion Bioreactor for Tissue Engineering