

## **PANEL: PREDICTIVE MODELING IN BEHAVIORAL PSYCHOLOGY – INSIGHTS FROM POLYGRAPH TESTING, PERSONALITY EVALUATION, AND ANTISOCIAL BEHAVIOR / MODELARE PREDICTIVĂ ÎN PSIHOLOGIA COMPORTAMENTALĂ – PERSPECTIVE ASUPRA TESTĂRII POLIGRAF, EVALUĂRII PERSONALITĂȚII ȘI COMPORTAMENTULUI ANTISOCIAL**

### **Panel Moderators/Coordinators:**

Prof. PhD. Hab. Dana RAD, „Aurel Vlaicu” University of Arad - <https://orcid.org/0000-0001-6754-3585> Assoc. prof. PhD. Tiberiu DUGHİ, „Aurel Vlaicu” University of Arad - <https://orcid.org/0000-0002-6991-3866> Assoc. Prof. PhD. Alina COSTIN, „Aurel Vlaicu” University of Arad - <https://orcid.org/0000-0002-5305-9183> Assoc. Prof. PhD. Regis ROMAN, Aurel Vlaicu” University of Arad - <https://orcid.org/0000-0001-6122-4540> Assoc. Prof. PhD. Gabriela VANCU, „Aurel Vlaicu” University of Arad - <https://orcid.org/0000-0002-7511-9298> Assoc. Prof. PhD. Sonia IGNAT - <https://orcid.org/0000-0001-5809-8838> Lect. PhD. Edgar DEMETER „Aurel Vlaicu” University of Arad - <https://orcid.org/0000-0001-8552-9453> Lect. PhD. Roxana CHIȘ „Aurel Vlaicu” University of Arad - <https://orcid.org/0000-0003-4164-4358>, Assist. PhD. Gavril RAD „Aurel Vlaicu” University of Arad <https://orcid.org/0000-0002-5270-2309>

**Panel description:** The polygraph has long stood at the intersection of psychological science, forensic practice, and societal debate. While traditional scoring methods rely heavily on expert interpretation of physiological responses such as respiration, galvanic skin response, and cardiovascular activity, recent decades have brought a decisive shift toward automation, artificial intelligence, and neural networks. By developing automatic scoring systems for polygraph testing, researchers seek to reduce subjectivity, increase replicability, and enhance the predictive validity of lie-detection protocols. This evolution highlights the central role of polygraphy as not only a tool for deception detection but also a fertile ground for the integration of data-driven predictive models into behavioral psychology.

This panel emphasizes the transformative potential of predictive modeling in polygraph assessment, showcasing advances in artificial neural networks, decision-tree algorithms, and boosting regression models.

These approaches promise to refine the detection of deceptive behavior and antisocial tendencies by integrating multimodal physiological data and, in some cases, extending analysis toward EEG-based markers. By doing so, the polygraph evolves into a hybrid instrument—rooted in classical psychophysiology yet aligned with the ethical and methodological demands of the digital age. At the same time, the discussion extends beyond deception detection to include psychosocial interventions addressing wellbeing in elderly care, resilience among migrants, adaptation of foreigners in custody, and prevention of recidivism in probation systems. Each of these areas reflects the growing reliance on evidence-based strategies and predictive tools for understanding and mitigating vulnerability. Education, too, is brought into focus as a protective factor against delinquency, where structured pathways can reduce risks and support community cohesion. Finally, the panel addresses the ethical dimensions of AI integration in behavioral sciences. As predictive models gain prominence, it becomes essential to ensure that algorithmic tools respect human dignity, avoid bias, and reinforce professional responsibility. Ethical AI in psychological assessment represents both a challenge and an opportunity: it calls for balancing innovation with accountability in contexts where decisions profoundly affect individual lives.

By interconnecting these perspectives, the panel positions the polygraph as a gateway theme—linking technology, psychology, social work, education, and ethics—illustrating how predictive models can reshape both theory and practice in behavioral sciences.

