3rd international DREAMS Workshop

EDCC 2022: 3rd Dynamic Risk managEment for AutonoMous Systems (DREAMS)

We are happy to announce the 3rd international DREAMS Workshop which is being organized in the context of the ICON project "Layers of Protection Architecture for Autonomous Systems" (LOPAAS), a collaboration between Fraunhofer and the University of York / Assuring Autonomy International Programme.

The DREAMS Workshop is a face-to-face-event, which is co-located with the 18th European Dependable Computing Conference (EDCC) in Zaragoza, Spain, from 12–15 September 2022.

Autonomous systems have enormous potential and are bound to be a major driver in future economic and societal transformations. In contexts where safety, or other critical properties, need to be guaranteed it is, however, presently not possible to exploit the full potential of autonomous systems. Unknowns and uncertainties are induced due to the high complexity of autonomous behaviors, the utilized technology and the volatile and highly complex system contexts. These characteristics render the base assumptions of established assurance methodologies (and standards) void; hence new approaches need to be investigated.

One general approach for making autonomous systems dependable is to make them aware of risks and empower them to assess and control those risks. Implementing such a Dynamic Risk Management (DRM) approach comes with many challenges concerning the necessary self- and context awareness. On the one hand, powerful and thus complex self-awareness and context awareness are necessary to minimize risks, resolve conflicting objectives, and make acceptable trade-off decisions. On the other hand, the complexity of DRM is in conflict with assurance and high confidence in adequate risk management. DRM has the potential to not only outright enable certain types of systems or applications, but also to significantly increase the performance of already existing ones. This is due to the fact that by resolving unknowns and dealing with uncertainties at runtime it will be possible to get rid of worst-case assumptions, which are typically detrimental to a system's performance properties.

The DREAMS Workshop intends to explore concepts, techniques, and technology for realizing DRM. It invites experts, researchers, and practitioners for presentations and in-depth discussions about the current status of DRM in practice, its relevance for specific use cases, its relation to existing assurance frameworks for autonomous systems and standardization activities. DREAMS aims at bringing together communities from diverse disciplines, such as safety engineering, runtime adaptation, predictive modeling, and control theory, and from different application domains such as automotive, healthcare, manufacturing, agriculture, and critical infrastructures.

Topics of interest include but are not limited to:
- Definition and modeling of the Operational Design Domain
- Approaches for monitoring AI-based components
- (Runtime) estimation and handling of uncertainties
- Approaches for formalizing risk and risk assessment
- Ethics of risk / machine ethics
- (Dynamic) assurance cases for autonomous systems and AI
- Collecting data from operation for continuous risk management / MLOps
- Case studies

All submissions will be peer-reviewed by at least three members of the program committee. They will be evaluated based on originality, contribution to the field, technical and presentation quality, and relevance to the workshop.

Please consider the following page limits:
- Regular technical papers describing original theoretical or practical work (6-8 pages)
- Case studies describing practitioner experience or field studies (8-12 pages)
- PhD Forum papers describing objectives, methodology, and results at an early stage of research (6-8 pages)
- Position papers on challenges and emerging trends (3-4 pages)

Author's Schedule (2022) | Important Dates:
- **Paper submission:**   6 June 2022
- **Author notification:**   25 June 2022
- **Camera-ready paper:** 3 July 2022

Organziers
- **Rasmus Adler (Fraunhofer IESE, Germany)**
- **Richard Hawkins (University of York, UK)**
- **Philipp Schleiß (Fraunhofer IKS, Germany)**

https://webdiis.unizar.es/EDCC22/index.html
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