Measuring Goal-Oriented Requirements Language Actor Stability

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Abstract

**Background:** Goal models describe interests, preferences, intentions, desired goals and strategies of intervening stakeholders during the early requirements engineering stage. When capturing the requirements of real-world systems such as socio-technical systems, the produced goal models evolve quickly to become large and complex. Hence, gaining a sufficient level of understanding of such goal models, to perform maintenance tasks, becomes more challenging. Metric-based approaches have shown good potential in improving software designs and making them more understandable and easier to maintain.

**Aim:** In this paper, we propose a novel metric to measure GRL (Goal-oriented Requirements Language) “actor stability” that provides a quantitative indicator of the actor maintainability.

**Method:** We first, validate the proposed metric theoretically then empirically using a case study of a GRL model describing the fostering of the relationship between the university and its alumni.

**Results:** The proposed actor stability metric is found to have significant negative correlation with the maintenance effort of GRL models.

**Conclusions:** Our results show that the proposed metric is a good indicator of GRL actors’ stability.

**Keywords:** Goal models, Goal-oriented Requirements Language (GRL), stability, metrics, maintenance