

Deontic Sensors

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Procedural programs do what we tell them, but not always what we want them to do, especially when presented with unexpected inputs (that we did not think about). We assume that such tight control reduces risk, whereas giving a program more autonomy is scary: “who knows what it might do?!?”.

In principle, some autonomy to choose an appropriate action ought to be at least as good and possibly better, by allowing greater resilience. But a program’s capacity to understand its environment is limited to what the designer knows or can foresee, which is no better than where we started.

To provide up-to-date interpretation of (aspects of) the environment, we propose “deontic sensors”, based on a formal model and realised through Answer Set programming. These sensors observe program actions and provide advice on what a program (agent!) can, ought and ought not to do and illustrate the concept with examples from a variety of socio-technical system demonstrators.