

Costing by Construction

Keynote Presentation

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Abstract. Predicting the performance of sequential systems is hard and concurrency brings additional complexities of coordination and timing. However, current models of concurrency tend to be unitary and so conflate computation and coordination. In contrast, the Hume language is based on concurrent generalised finite state boxes linked by wires. Boxes are stateless with transitions driven by pattern matching to select actions in a full strength functional language. This explicit separation of coordination and computation greatly eases concurrent system modelling: classical inductive reasoning may be used to establish properties within boxes, while box coordination may be explored independently through the novel box calculus. This seminar gives an introduction to the Hume language, cost models for Hume, and the box calculus, and considers how they might be integrated in a system to support costing by construction, where the resource implications of design decisions are made manifest as a system evolves.

Keywords. Hume, concurrency, coordination, computation, box calculus, cost models, performance

