Stage M2
Diagnosability verification in concurrent systems

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Fault Diagnosis is a classical task in control of discrete event systems (DES). It consists in determining, from a *partial observation* of the system behaviour, whether or not a given *invisible* fault event f has occurred. Verification of diagnosability goes one step further to ask which labelling function and how much observability are needed to allow one to eventually diagnose f with certainty. Traditional approaches start from finite state machine models ; in large distributed systems such as telecommunication networks, however, this modelling approach breaks down, and asynchronous models with partial order semantics are adequate instead. The subject of the internship is to develop and prototype efficient algorithms for inspecting distributed system models, given as labeled Petri nets, and efficiently verifying their observability and diagnosability properties .