Study of the Dining Philosophers

Various expression of a problem

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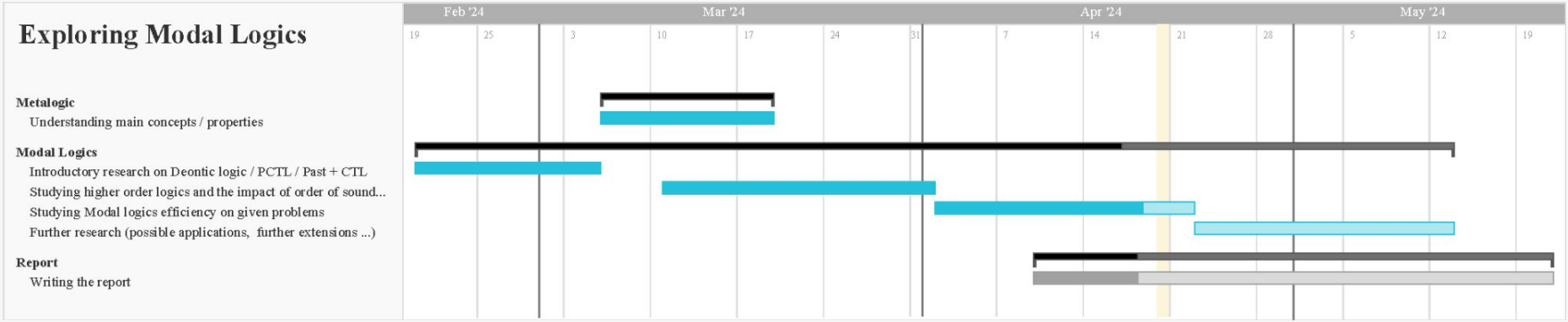
The planning

In case you thought we forgot

Exploring Modal Logics

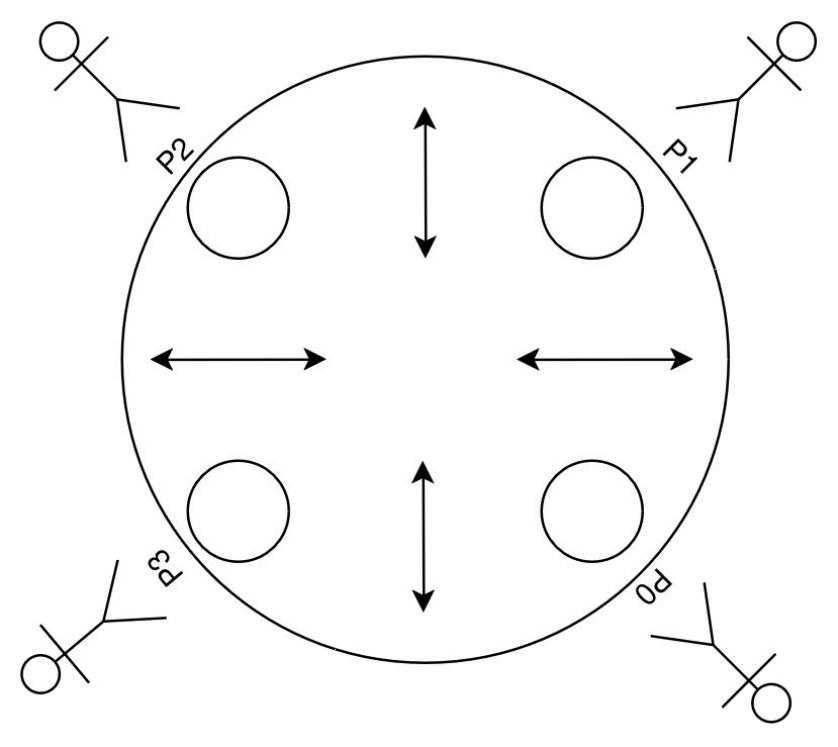


The dining philosophers

If you don't already know

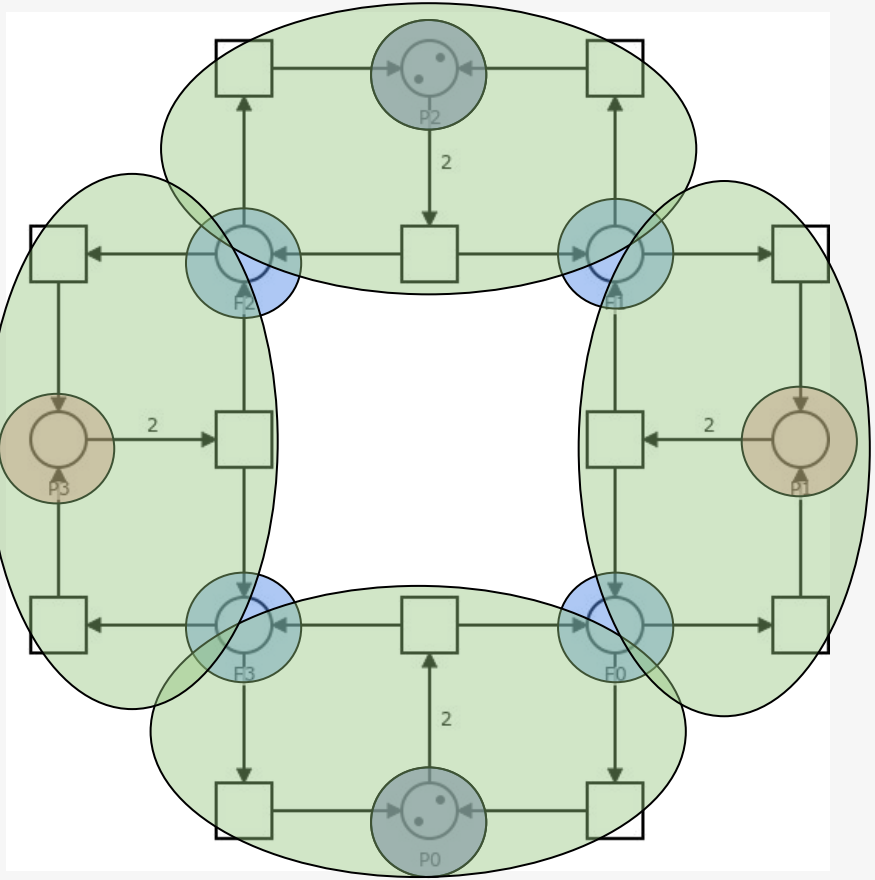
The dining Philosophers

Basic Setting



The dining Philosophers

Modelisation



- 4 actors
- 4 ressources
- 4 actions

One problem four logics

Deontic, CTL, P+CTL, PCTL*

Define One event:

$\mathbf{M}_i := \mathbf{P}_i$ is eating

Statement:

$\Diamond M_3$

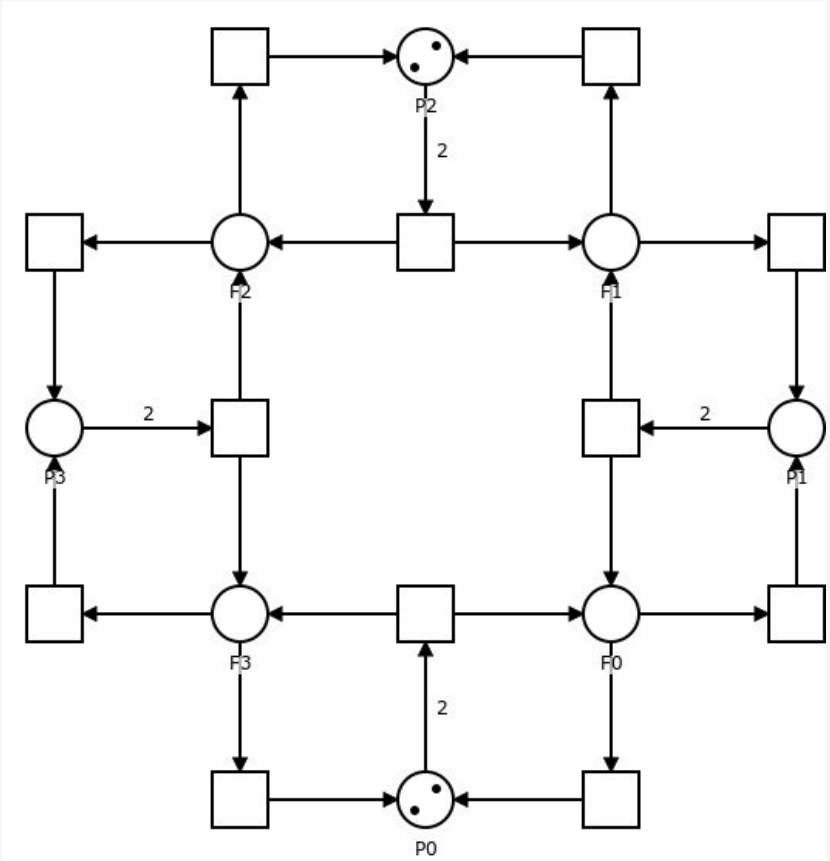
Modal

PM_3

Deontic

One problem four logics

Kripke Structure



$K := (S, I, R, L)$

$S := \{x \mid x \in \{\varepsilon, P_0, P_1\} \times \{\varepsilon, P_1, P_2\} \times \{\varepsilon, P_2, P_3\} \times \{\varepsilon, P_3, P_0\}\}$

$I := (P_0, P_2, P_2, P_0)$

One problem four logics

CTL*/P+CTL

Statement:

EXM_3

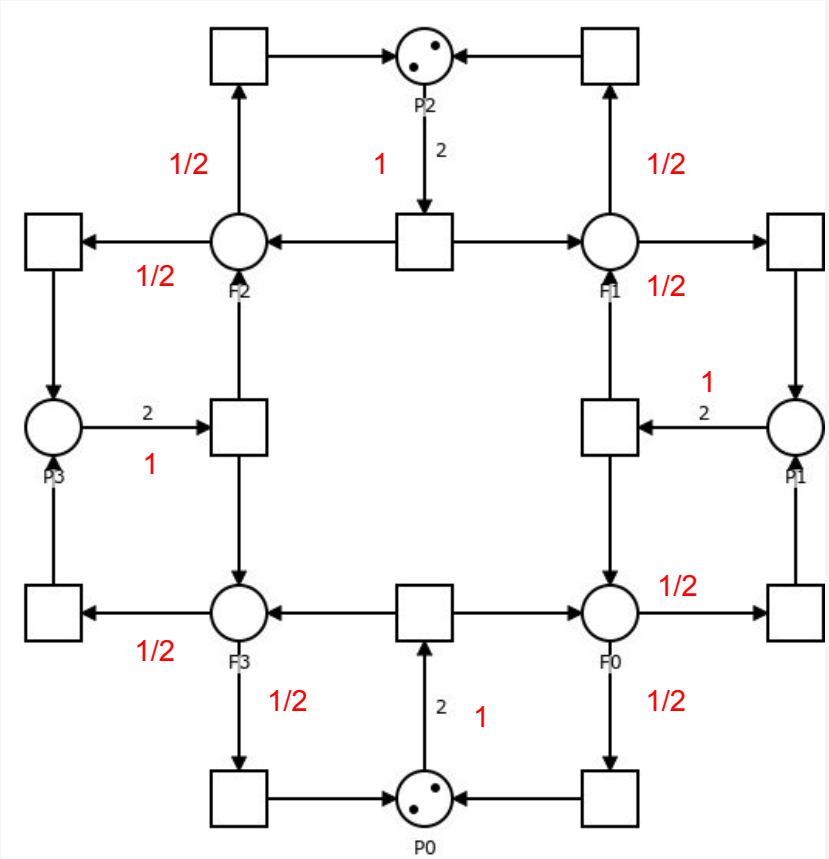
CTL*

EXM_3

PAST+CTL

One problem four logics

Markov Chain



One problem four logics

PCTL

Statement:

$$P_{p>0}(EXM_3)$$

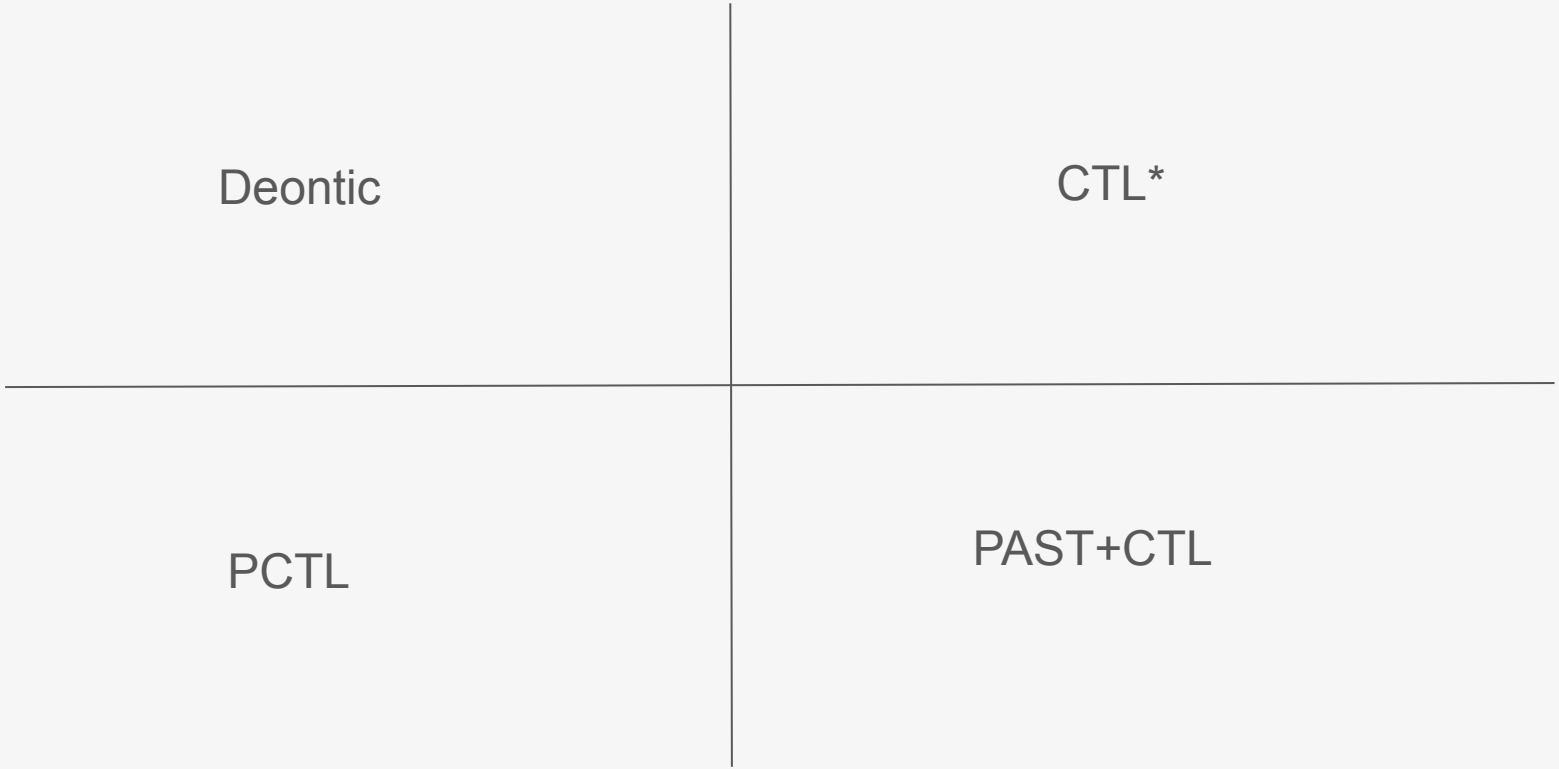
PCTL

Expressivity

Structures and Logic

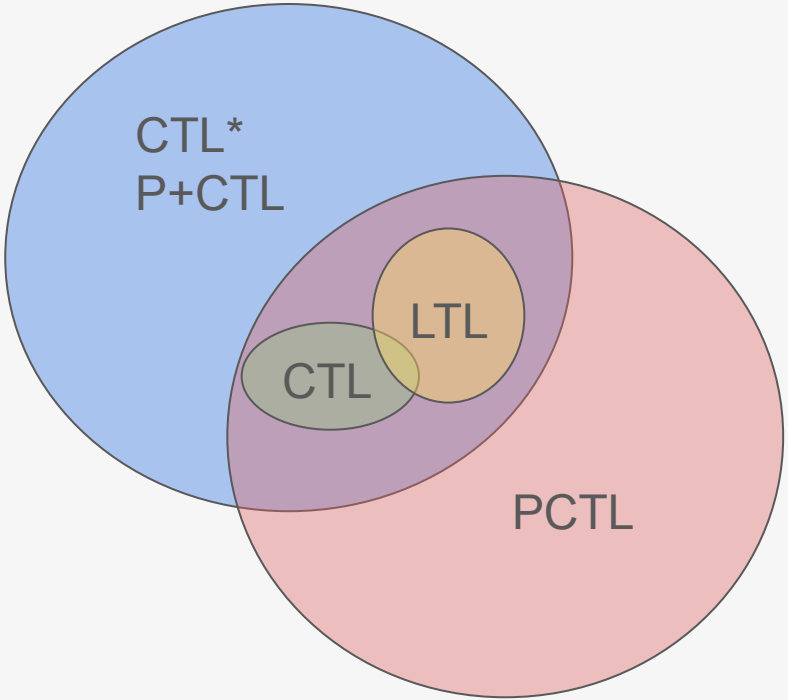
Expressivity

Summary



Expressivity

Summary



THANK YOU

Any questions? Remarks ?