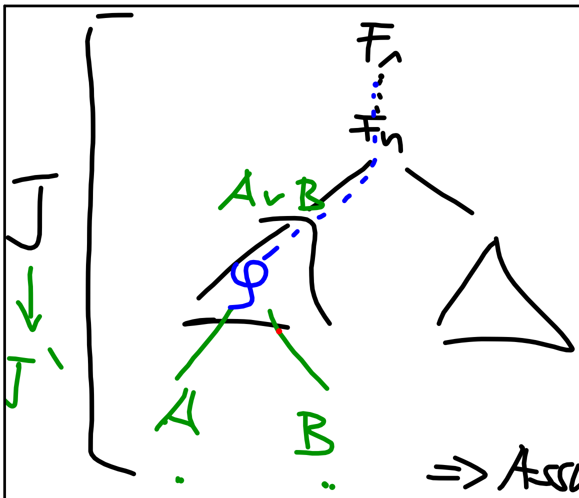


To show

$\mathcal{J}'$ is satisfiable if and only if $\mathcal{J}$ is satisfiable

"Satisfiability is invariant"

$\Rightarrow$ Assume $\mathcal{J}$ is satisfiable

$\Rightarrow$ There is some $\varphi = (I, \mathcal{D})$ s.t. for all β, φ is represented by some branch T

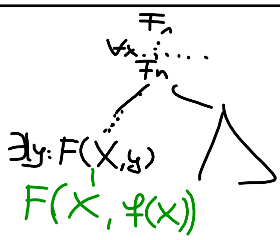
$\Leftrightarrow \varphi \models_\beta A \vee B$

$\Leftrightarrow \varphi \models_\beta A$ or $\varphi \models_\beta B$

$\Leftrightarrow \varphi$ is a model of T_{left} or of T_{right}

$\Rightarrow \mathcal{J}'$ is also satisfiable (by φ as before)

Dez 13-10:11



$\mathcal{J}$ is satisfiable

~~there is some~~

$\Rightarrow \varphi = (I, \mathcal{D})$ and for all β that assign X to some $d \in \mathcal{D}$ there is some branch T s.t. $\varphi \models_\beta T$

interesting case: T is the branch that is extended.

$\Rightarrow \varphi \models_\beta \exists y{:}F(X,y)$ $\beta : X \to d$

Task: find some structure S' s.t. for all β, $\varphi' \models_\beta T'$

Set φ' the same as φ as far as possible

$\varphi' = (I', \mathcal{D})$

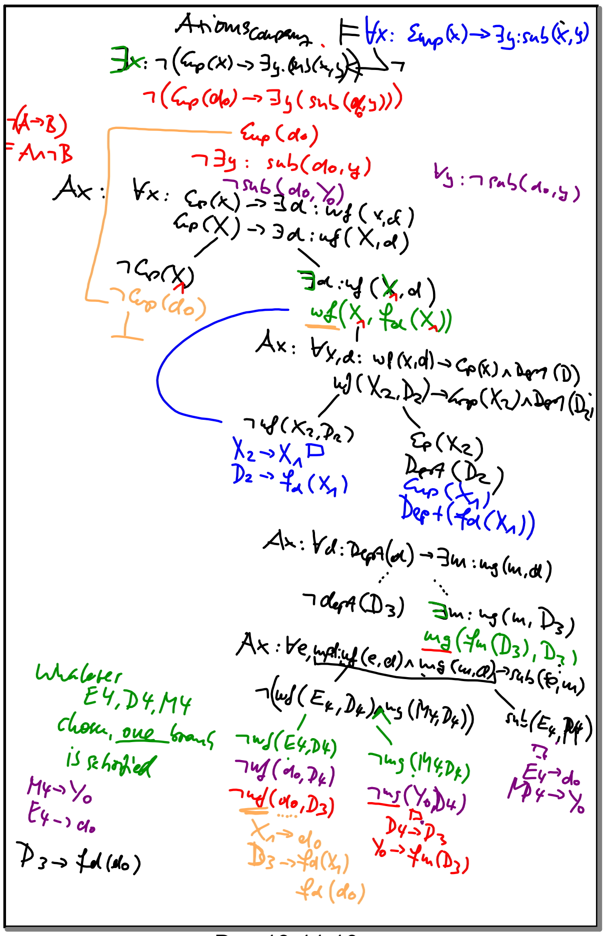
let $I' = I$ wherever I is defined, namely for all predicate symbols and all fct symbols that in T

$\Rightarrow$ exists $d' \in \mathcal{D}$ s.t. $\varphi \models_{\beta^{y}_{d'}} F(X, y)$

define new, extended structure that satisfies $\mathcal{J}'$

$\varphi' \models_\beta F(X, f(X))$ when I': $I'(f) : \beta(X) \xrightarrow{\text{known}} d'$

Dez 13-10:44



Dez 13-11:10

Dez 13-11:42