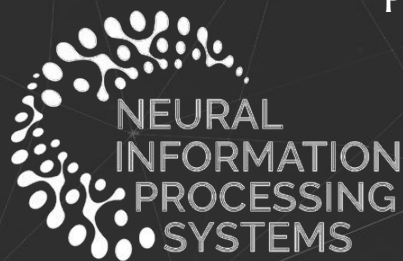


RELATIONAL CONCEPT BOTTLENECK MODELS

PIETRO BARBIERO, FRANCESCO GIANNINI, GABRIELE CIRAVEGNA,
MICHELANGELO DILIGENTI, GIUSEPPE MARRA

NEURIPS 2024



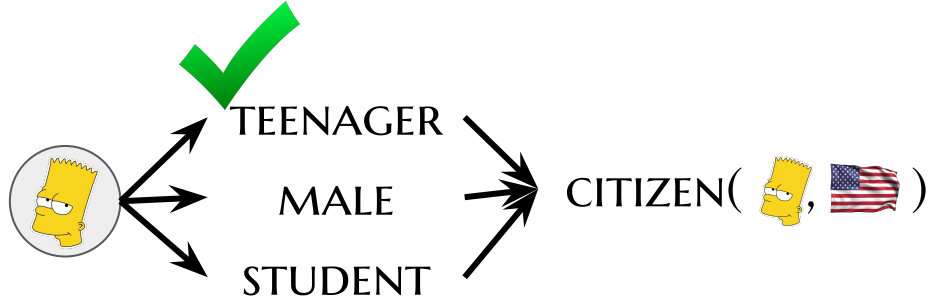
PROBLEM

CITIZEN(, )?

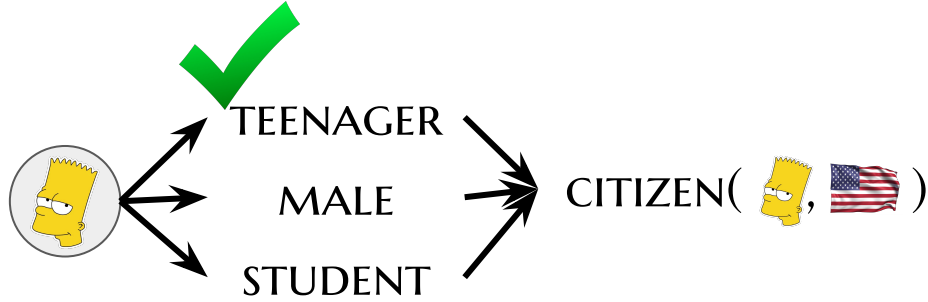
ANSWER RELATIONAL
QUERIES
ACCURATELY

CONCEPT-BASED
EXPLANATIONS &
INTERVENTIONS

CONCEPT BOTTLENECK MODELS



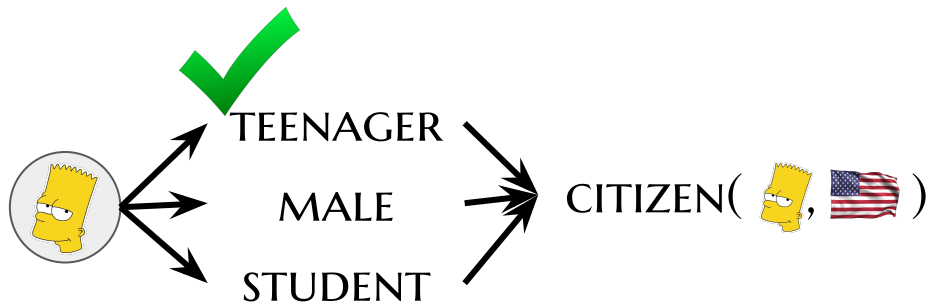
CONCEPT BOTTLENECK MODELS CANNOT ANSWER RELATIONAL QUERIES



CITIZEN(Bart Simpson, 🇺🇸)?



CONCEPT BOTTLENECK MODELS CANNOT ANSWER RELATIONAL QUERIES



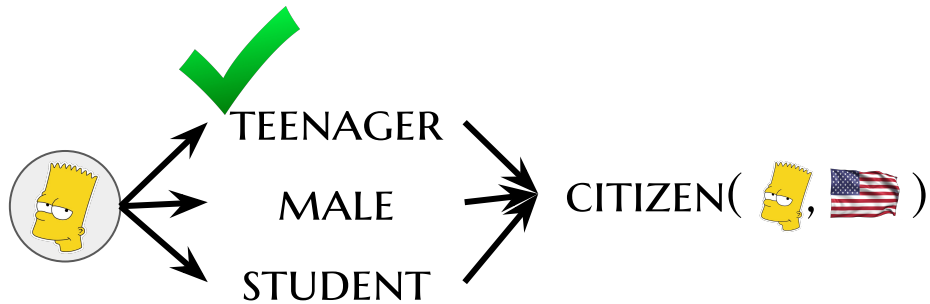
CITIZEN(Bart Simpson, 🇺🇸)?



RELATIONAL DL MODELS



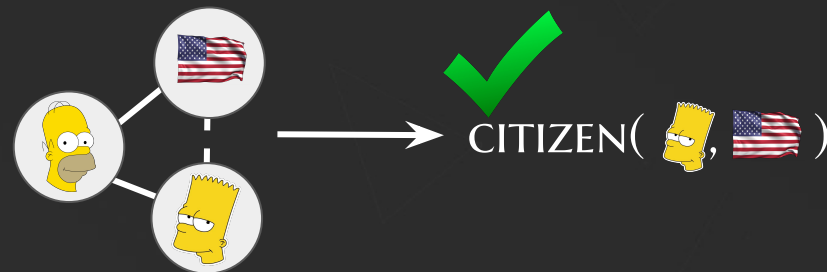
CONCEPT BOTTLENECK MODELS CANNOT ANSWER RELATIONAL QUERIES



CITIZEN(, )?



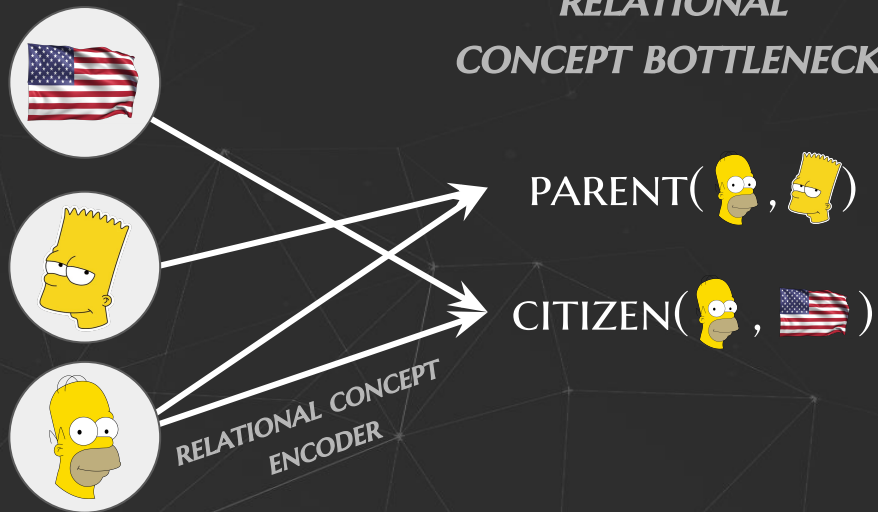
RELATIONAL DL MODELS DO NOT PROVIDE CONCEPT-BASED EXPLANATIONS



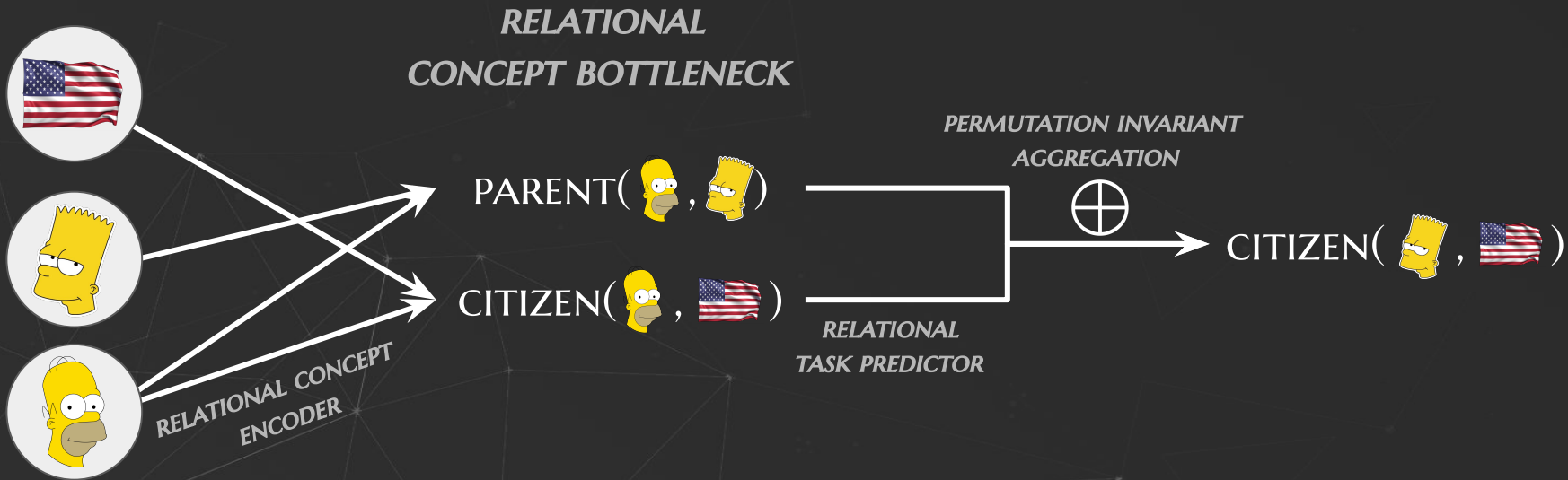
EXPLAIN &
INTERVENE



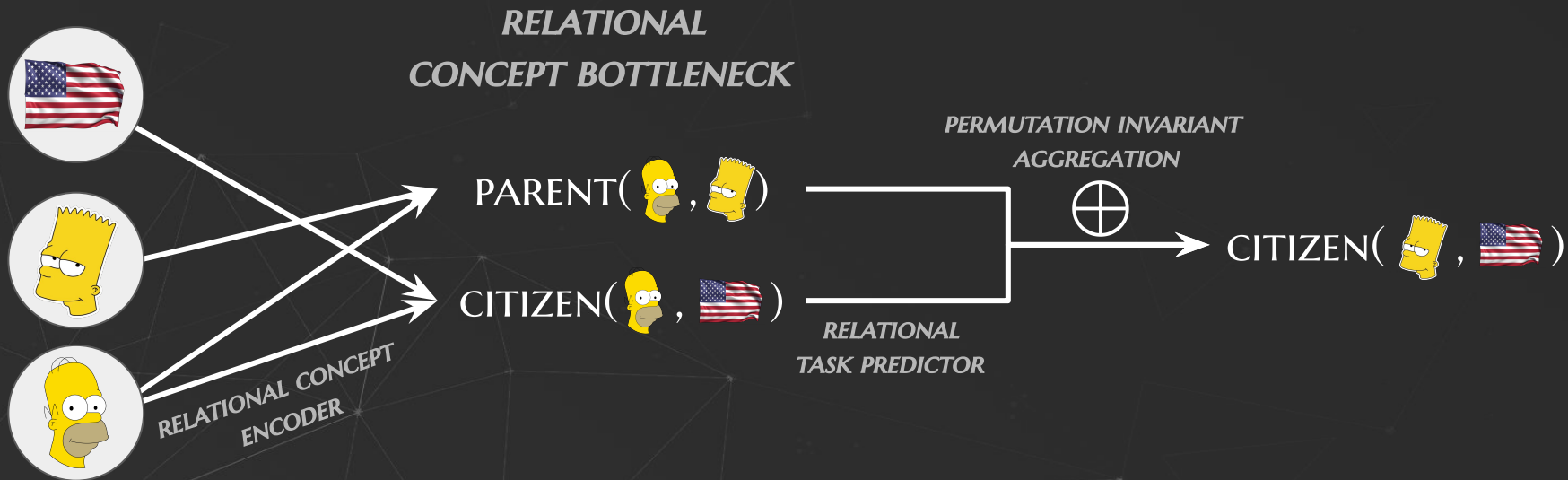
RELATIONAL CONCEPT BOTTLENECK MODELS



RELATIONAL CONCEPT BOTTLENECK MODELS



RELATIONAL CONCEPT BOTTLENECK MODELS



PAPER

EXPLAIN &
INTERVENE ✓

CITIZEN(👤, 🇺🇸)? ✓