

NRI: INT: COLLAB: PROGRAM VERIFICATION & SYNTHESIS FOR COLLABORATIVE ROBOTS



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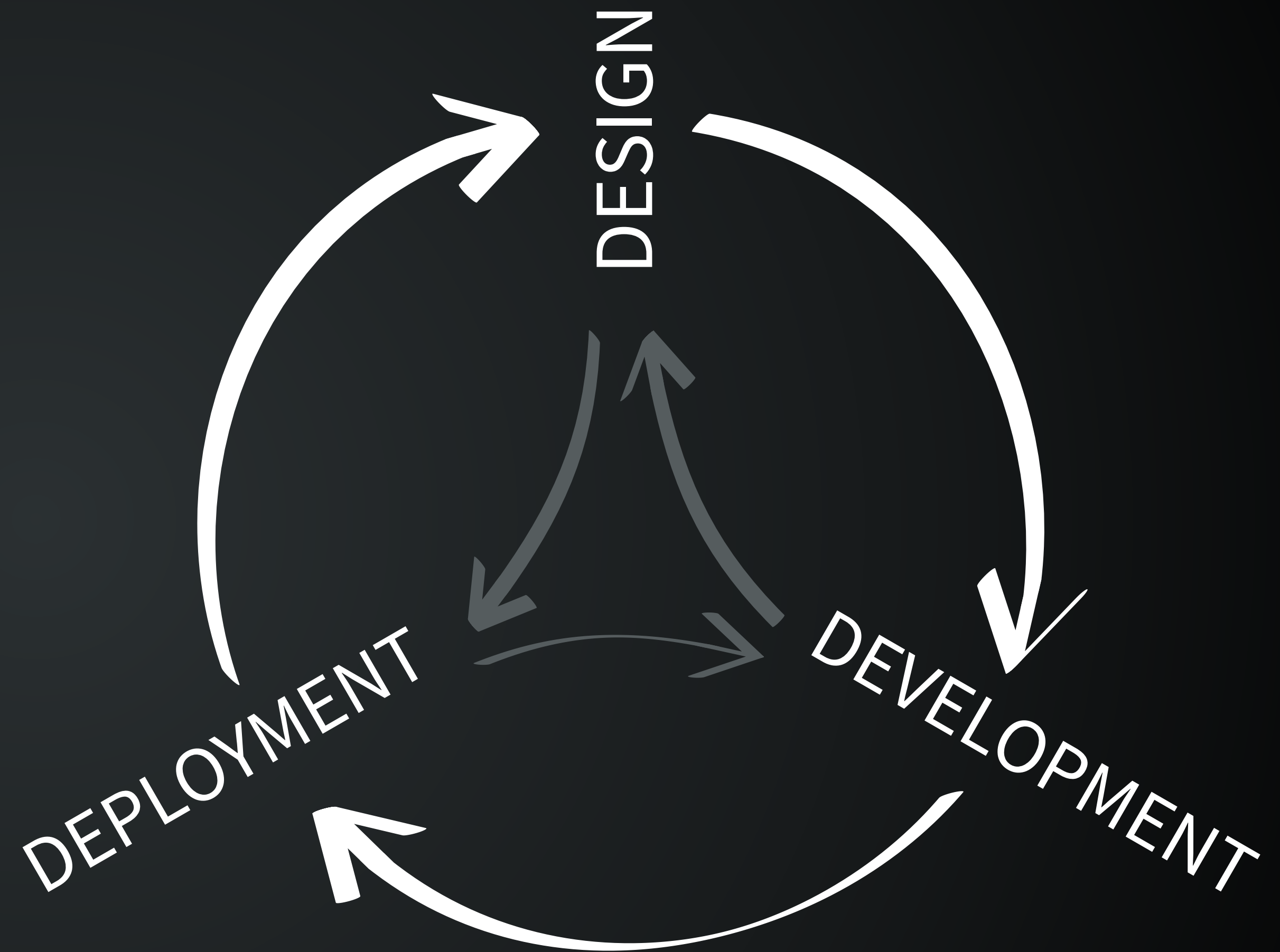
UNIVERSITY OF WASHINGTON



NRI # 1924435

Project Mission:

To create novel representations, methods, and tools that enable the programming of interactive robots by users with a wide range of backgrounds and experience in robotics



Robotics Application Development Cycle

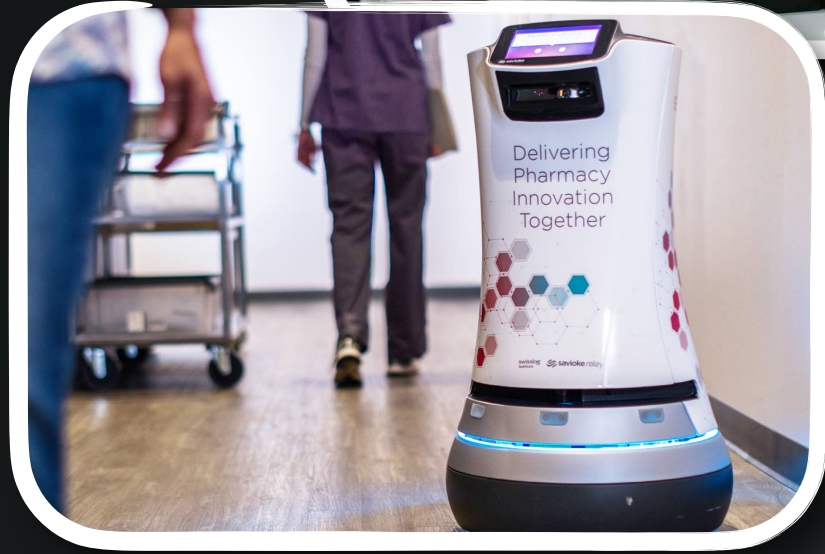
Domain expert



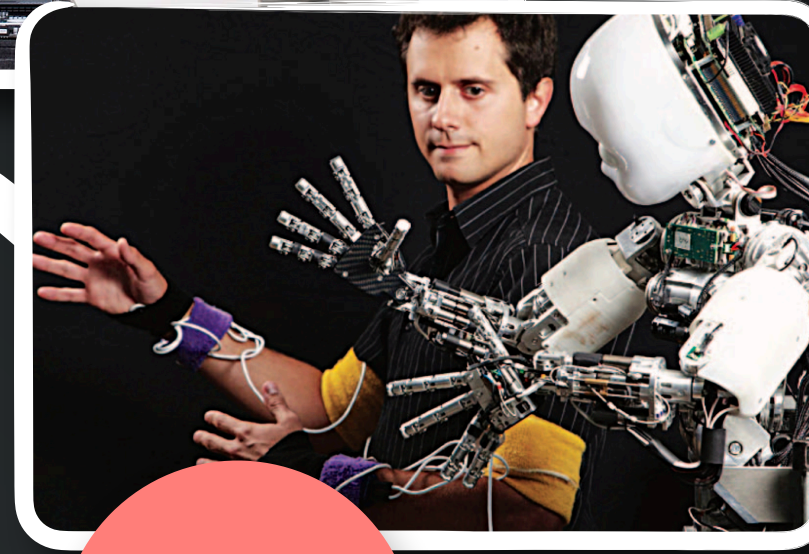
Methods for real-world personalization & adaptation



End-user



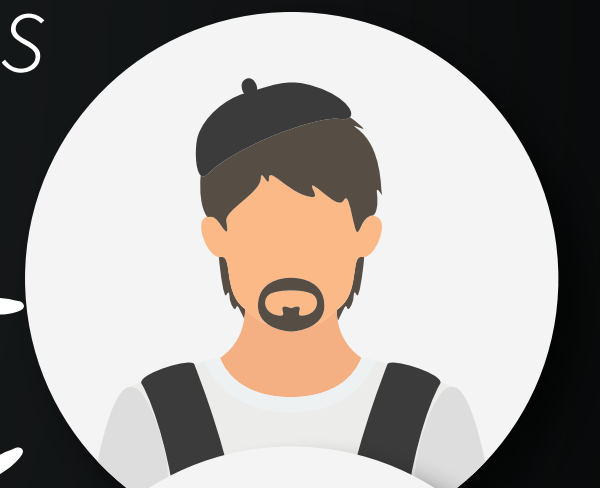
DESIGN



1

Methods for translating designer intent into programs

Designer



2

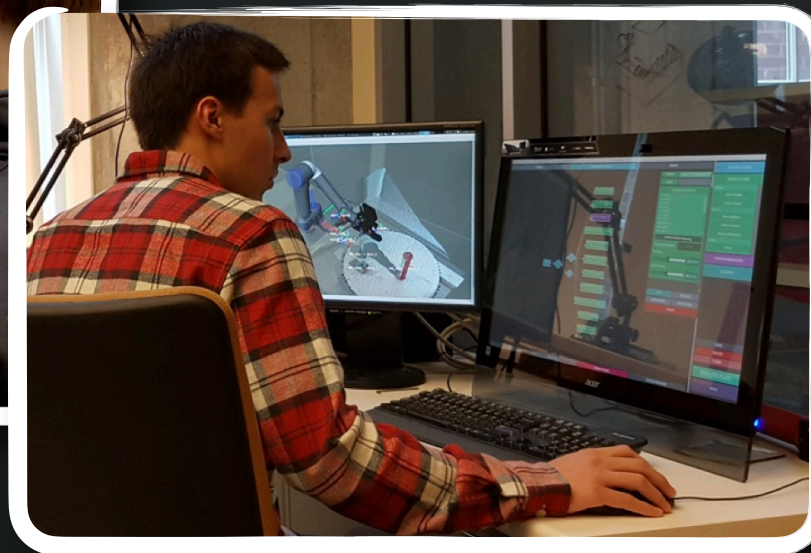
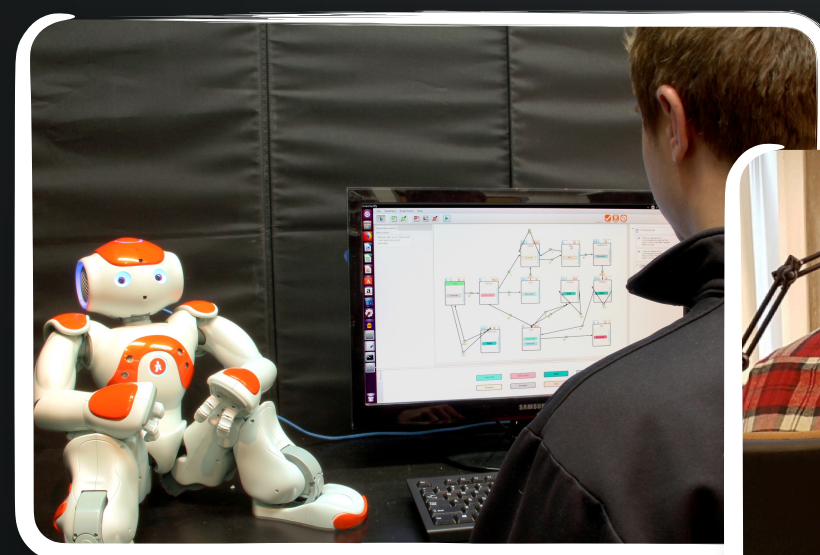
Methods for development, testing, program analysis, & synthesis



Developer

DEPLOYMENT

3



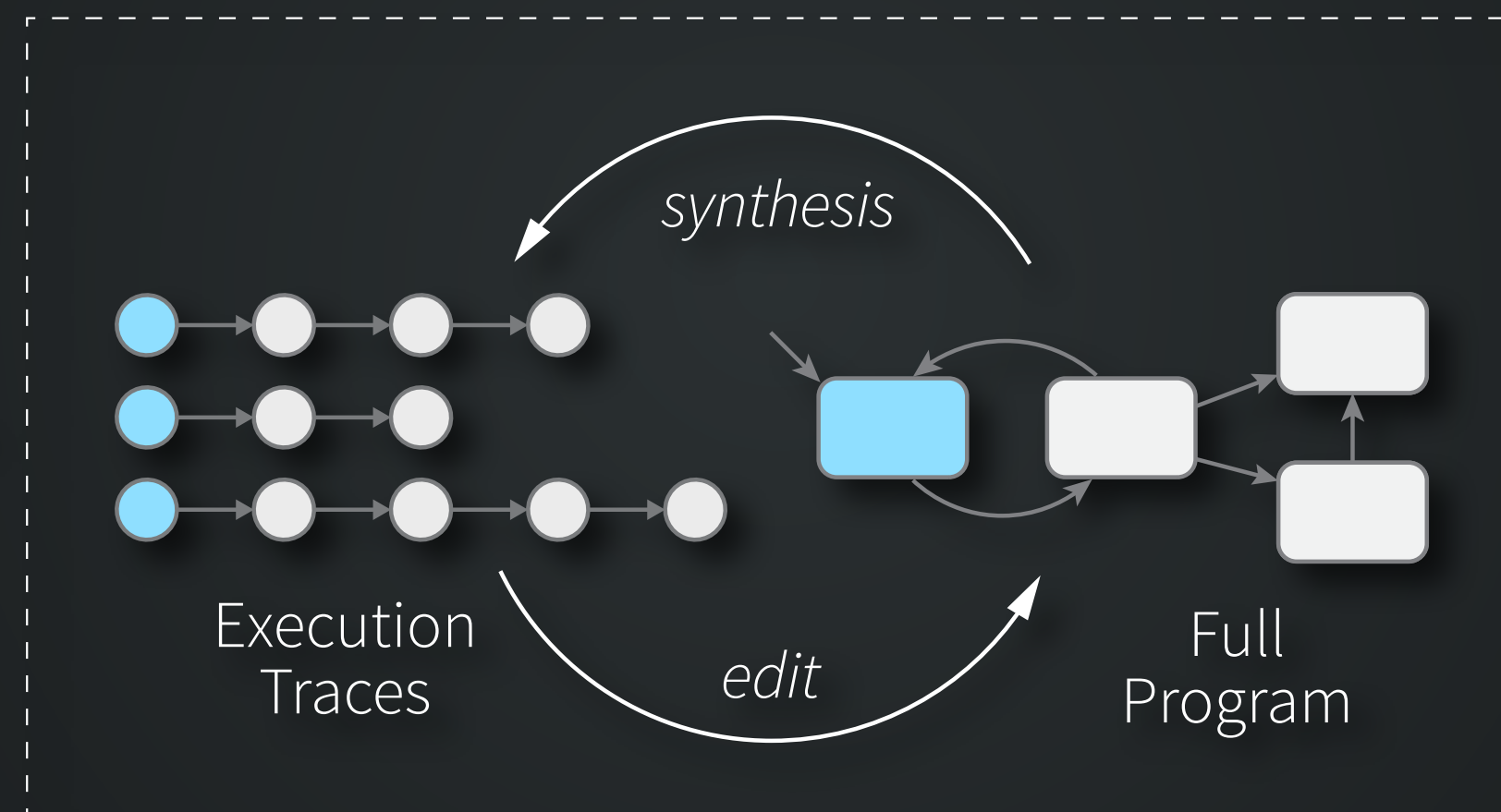
1

METHODS FOR TRANSLATING DESIGNER INTENT INTO PROGRAMS

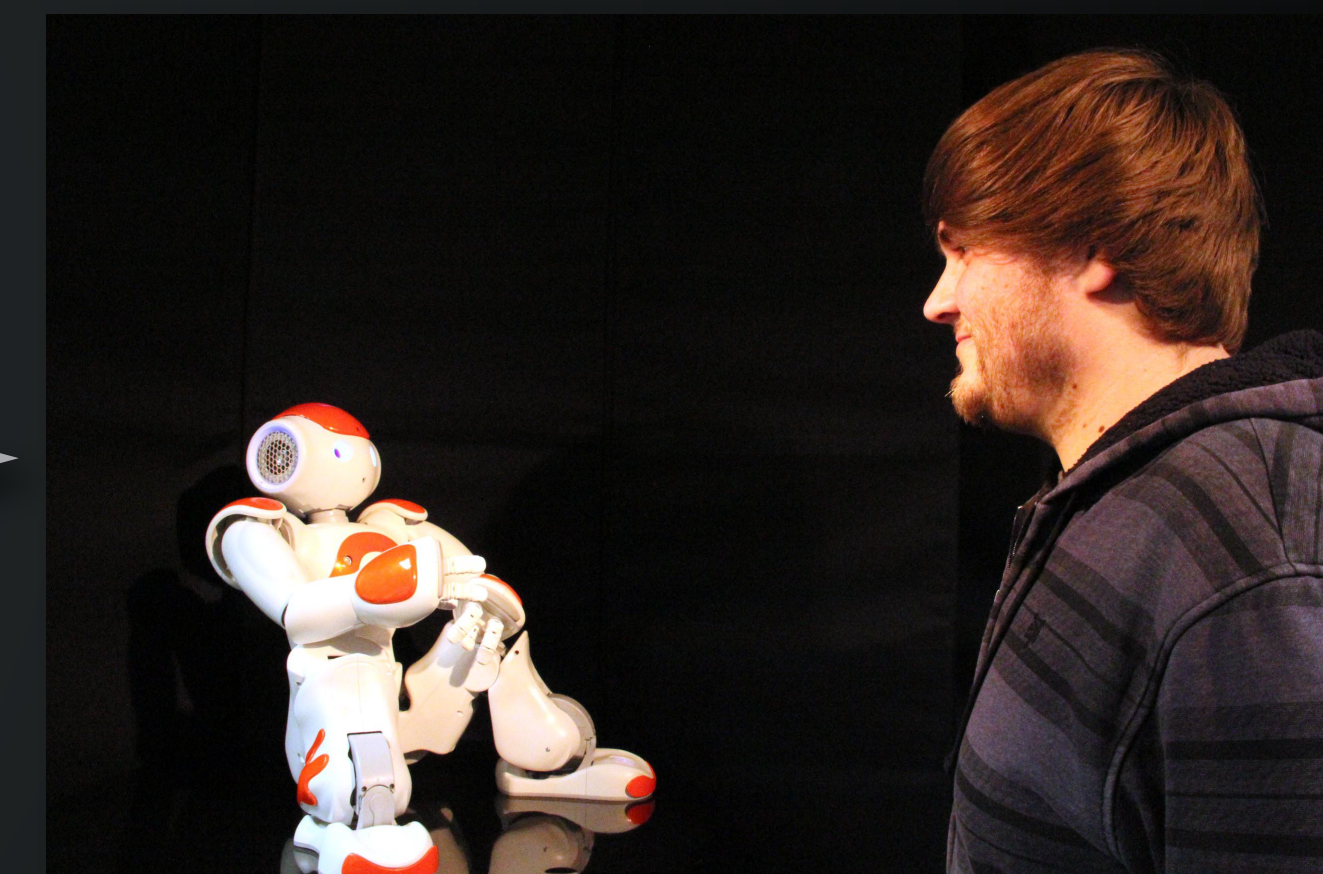
EXAMPLE 1. SYNTHÉ | UIST 2019



Designers *bodystorm* interaction traces



Synthé synthesizes a full interaction program



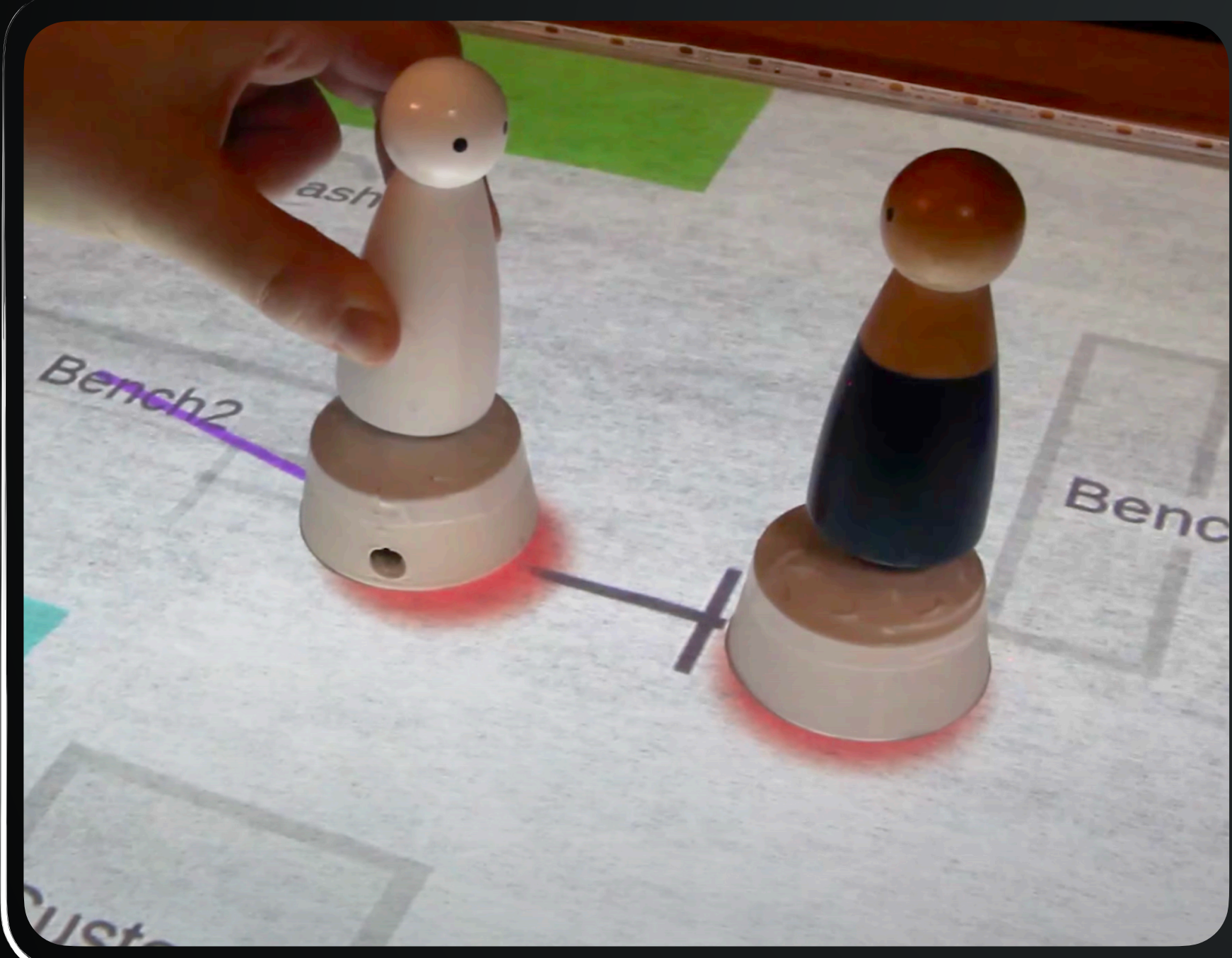
Designers test the prototype program

1

METHODS FOR TRANSLATING DESIGNER INTENT INTO PROGRAMS

EXAMPLE 2. FIGARO | CHI 2021

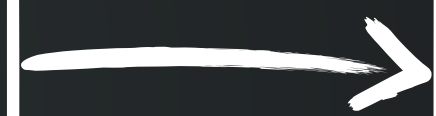
Multimodal input



Tabletop interface



Tablet interface

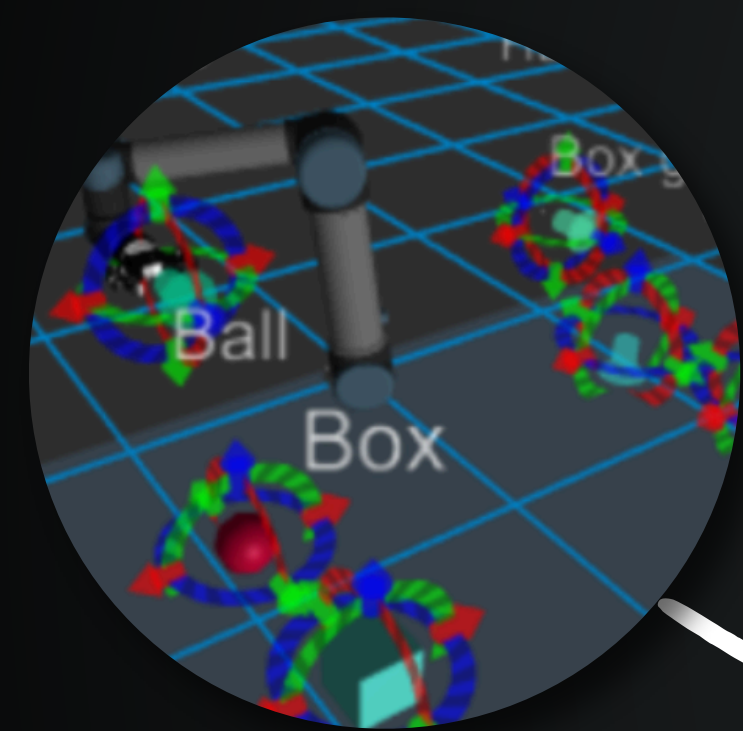


Deployment

2

METHODS FOR DEVELOPMENT, TESTING, PROGRAM ANALYSIS, & SYNTHESIS

EXAMPLE. AUTHR | UIST 2020



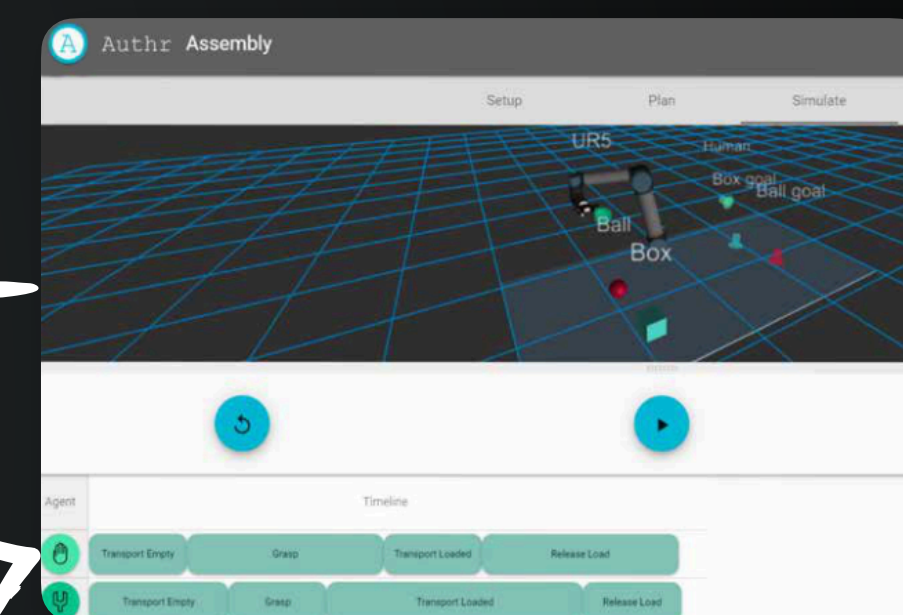
Setup workspace



Construct tasks

Task 1	Task 2

User evaluation



Simulate & review

Optimization & verification



Deploy

3

METHODS FOR REAL-WORLD PERSONALIZATION & ADAPTATION

EXAMPLE. TRANSFORMING PROGRAMS | CHI 2020

