

Potentially Bigger Data

ACT-R Workshop 2017 London

Beyond Experimental Data

- Three presentations
 - Me - Three Game related projects
 - Matthew - Text to knowledge
 - David - Language
- Discussion

Using Apps and Games to Evaluate Cognitive Architectures

R. West, K. Dudzik, N. Nagy, F. Karimi

Apps for ACT-R

- Games designed for testing ACT-R
- Start with models of micro strategies
- Make simple games with corresponding models
- Distribute and test
- Large groups and experts



MIT AI2

MIT App Inventor

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FourButtonExpert_12 Buttons Add Screen ... Remove Screen Designer Blocks

Blocks

- Built-in
 - Control
 - Logic
 - Math
 - Text
 - Lists
 - Colors
 - Variables
 - Procedures
- Buttons
 - HorizontalArrangement1
 - bar1
 - bar2
 - bar3
 - eval
 - Label2
 - TableArrangement1
 - Button1

Rename Delete

Viewer

Initialize global unit_task to unknown
Initialize global planning_unit to unknown
Initialize global game to unknown
Initialize global ut_op to unknown
Initialize global pu_ut to unknown
Initialize global response_colour to 1

when Button1 Click
do
call get_response_code = button_number 1

when Button2 Click
do
call get_response_code = button_number 2

when Button3 Click
do
call get_response_code = button_number 3

when Button4 Click
do
call get_response_code = button_number 4

when Button5 Click
do
call start

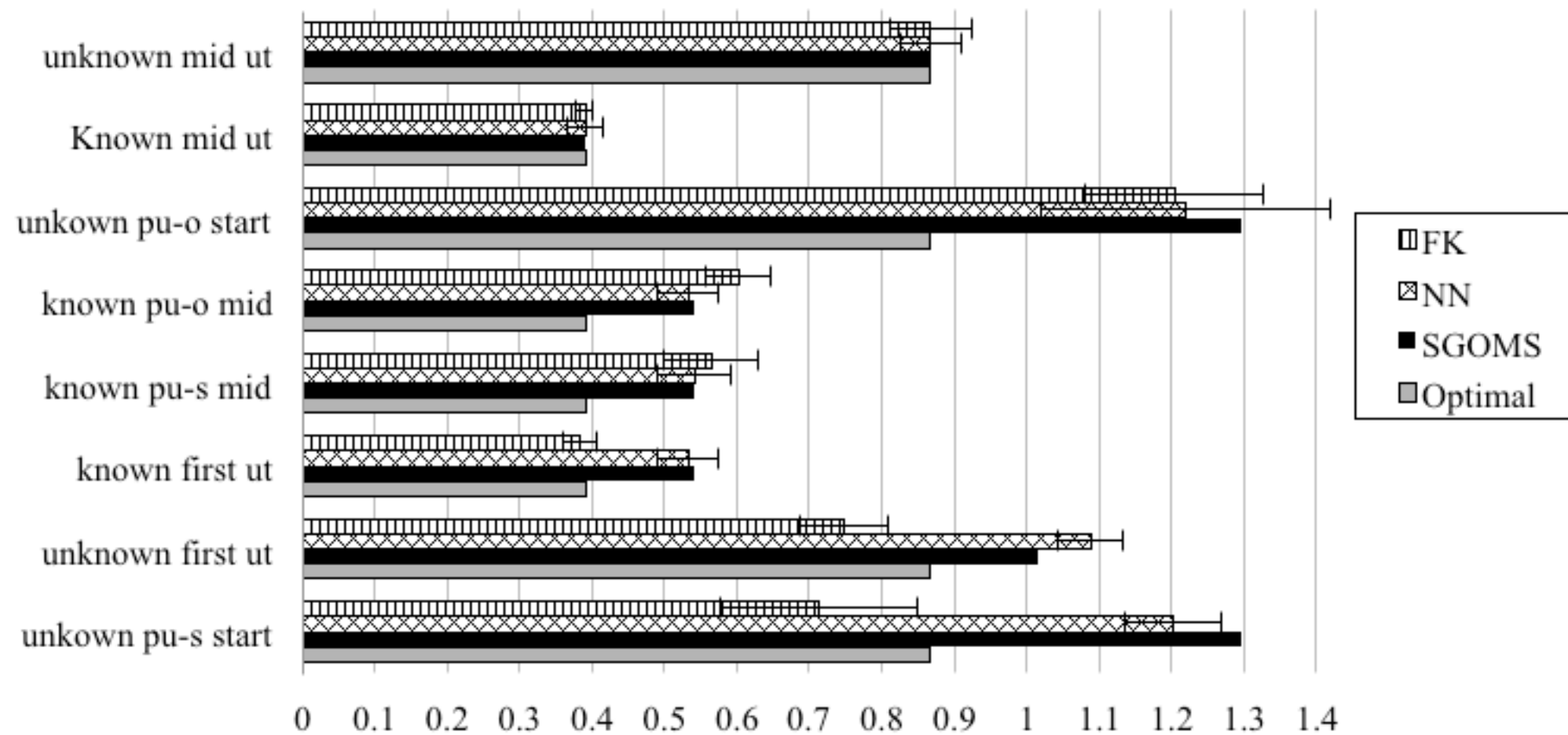
to get_response_code button_number
do
set global button_press_counter to 1 + get global button_press_counter
if get global button_press_counter = 1
then
set bar1 BackgroundColor to
set eval BackgroundColor to
set eval Text to
else if get global button_press_counter = 2
then
set bar2 BackgroundColor to
set eval BackgroundColor to
set eval Text to
else if get global button_press_counter = 3
then
set bar3 BackgroundColor to
set eval BackgroundColor to
set eval Text to
else if get global button_press_counter = 4
then
replace list item list get global response
index get global button_press_counter
replacement get button_number
if get global button_press_counter = 4
then
call evaluate_response

to evaluate_response
do
if get global response = get global answer
then
set eval BackgroundColor to
set eval Text to correct response
call set_code
else
set eval BackgroundColor to
set eval Text to incorrect response
call Sound
call set_code

to set_code
do
if get global game = unknown and get global operator = end
then
set global operator to pick a random item list look up in pairs key get global operator pairs get global ut_op notFound not found
set global answer to call operators .GetValue
tag get global operator
valueIfTagNotThere
set Label2 Text to get global operator
valueIfTagNotThere
if get global operator = end
then
set global unit_task to pick a random item list look up in pairs key get global unit_task pairs get global pu_ut notFound not found
if get global unit_task = end
then
set global planning_unit to pick a random item list call games .GetValue
tag get global game
valueIfTagNotThere
set global pu_ut to call planning_units .GetValue
tag get global planning_unit
valueIfTagNotThere
set global unit_task to select list item list select list item list call planning_units .GetValue
tag get global planning_unit
valueIfTagNotThere
set global ut_op to call unit_tasks .GetValue
tag get global unit_task
valueIfTagNotThere
set global operator to select list item list select list item list get global ut_op index 1

Show Warnings

Human and Model Results



Using Cognitive Architectures to Explain Real Time Strategy Games

C. Peters, R. West, B. Esfandiari

Complex Games

- Blizzard has made the original Starcraft open source
- AI tournaments
 - Lots of big data used here
 - Alpha GO techniques
- AI versus human tournaments
 - Humans still win

ACT-R/SGOMS inspired agent versus ChadBot



ACT-R/SGOMS inspired agent versus ChadBot



ACT-R/SGOMS inspired agent versus ChadBot



ACT-R/SGOMS inspired agent versus ChadBot



Generating Narrative with ACT-R Agents

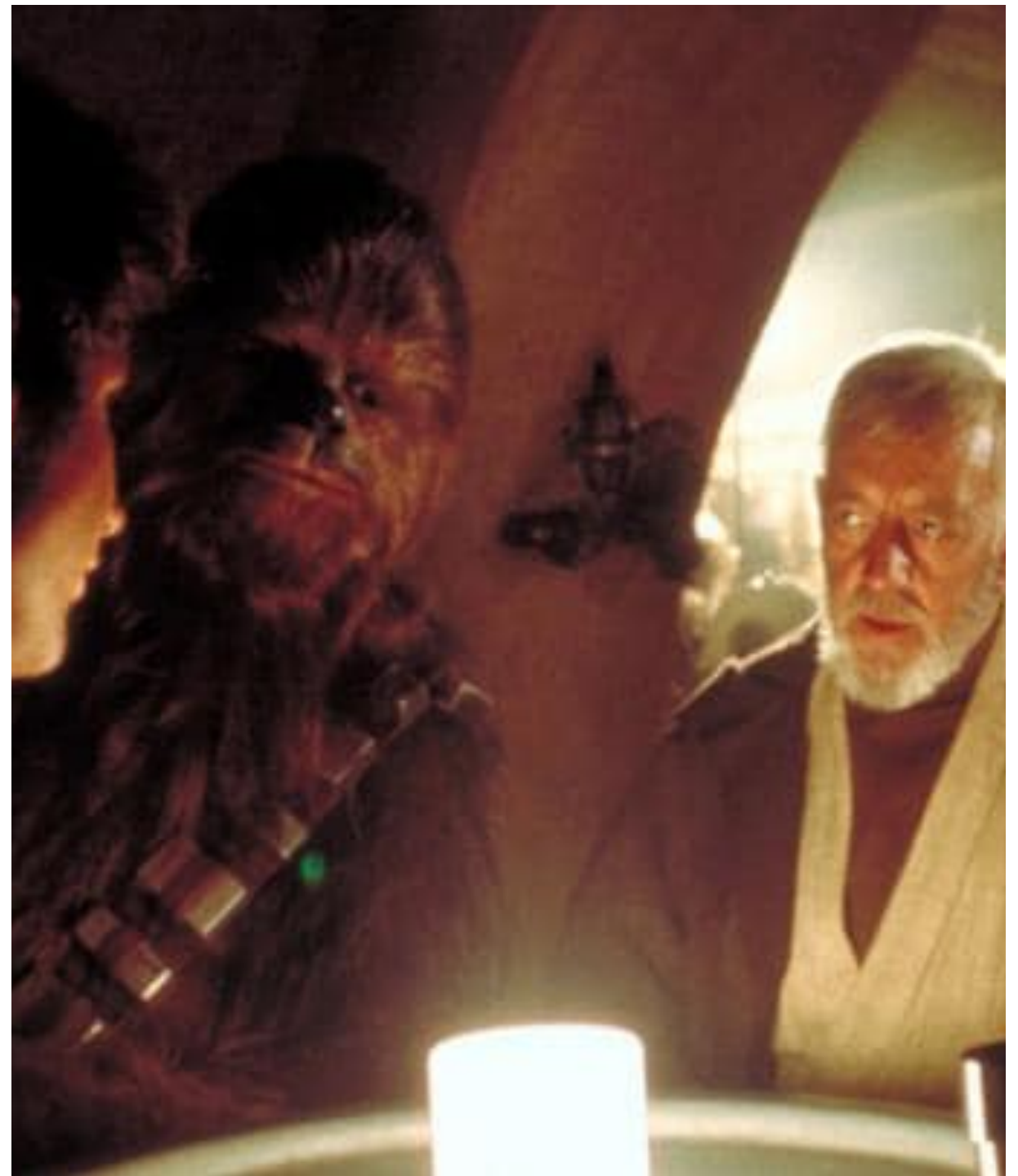
R. West, K. Dudzik, B. Greenspan

Rachelle Project

- Project with Digital Humanities
- Literary project
- Based on William Gibson's novel, IDORU
- And Allan Newell's idea to model a whole task
- Purpose - generate realistic narrative



- Rachel works in a bar
- She has realistic, expert bartender knowledge
- She also has emotions and values
- Other characters have other reasons to be in the bar
- Interaction produces narrative
- Narrative is qualitatively evaluated



Applications

- Design better Non Player Characters
- Authoring tool

