



Universität
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Collective Intelligence using POGS Tool

Advanced Topics in Artificial Intelligence 2022

Session 08 Tutorial



Outline

- ❑ POGS
- ❑ Installation
- ❑ Platform Interface
- ❑ Workflow
- ❑ Task Demo



POGS

Platform for Online Group Studies (POGS) is a tool to study collective learning.

- Browser based platform for running group studies that involve synchronous collaboration and interaction
- Design various type of tasks such as
 - Multi-player and coordination games
 - Multiple-choice tests
- Manipulate group communication structures and support group processes with collaboration tools and bots
- Run a set of tasks and collect individual- and group-level data



POGS Installation

➤ Approach 1: Docker based

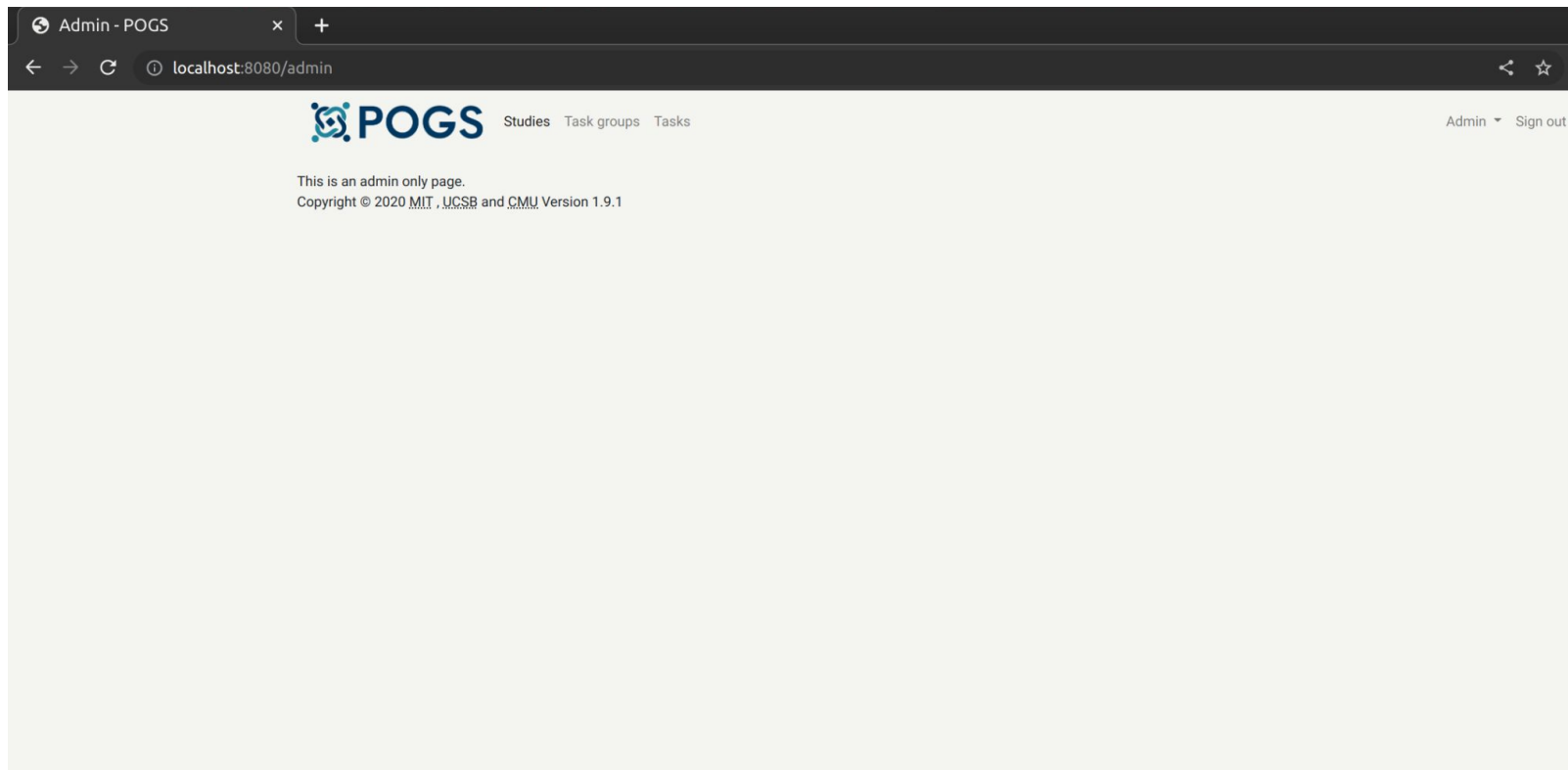
- Install Docker
- Clone the repository (CCI-MIT/POGS)
- `cp sample.env .env`
- Run at repository root directory:
 - `docker image prune`
 - `docker-compose up`
- Open a browser window at <http://localhost:8080/initialize>
- Load the study configuration file
 - Select file: `others/T1ShortDemo.zip` and click INITIALIZE
- After confirmation go to: <http://localhost:8080/admin>
 - Use the following credentials:
 - User: admin@pogs.info
 - Password: `pogs1234`

➤ Approach 2:

- Requirements:
 - Java 8
 - mysql-server 5.7
 - nodejs (used for sass) version v9.11.1
- Refer to the github repository (<https://github.com/CCI-MIT/POGS>)



Interface





POGS Workflow





Example Tasks

	A	B	C
1			western
2		optimal	
3		commando	



As a group, you will fill the empty grid by placing as many words as you can in their correct cells. You will receive one point for a correctly spelled word placed in the correct location.

	A	B	C
1			
2			
3			

50 seconds

If you experience technical problems, please click [here](#)

Teamates:

su01

su02

su03

su04

Group chat

Input message... [Send](#)



Example Tasks



03:24 minutes

As a group, please fill in this sudoku puzzle so that every row, every column, and every 3x3 box has the digits 1-9 once and only once.

The puzzle spaces are synchronized so your group will see what you type as soon as you click out of a space.

	7				2	5		8
	9	6			1			7
	5		9					
			7	2		4	8	3
6				9				5
2	8	4		1	5			
					8		4	
7			4			3	5	
9		5	1				6	2

Teamates:

su01
su02
su03
su04

Group chat

Input message...

Send



Example Tasks

05:44 minutes

As a group, please type as much of the text below as possible. Please chat with your teammates to coordinate your group work. Here are the instructions as a reminder:

1. Before typing the text, **hit the Enter key several times** so you don't type over others' text.
2. Your group will receive 1 point for each typed word. Your group will not lose points for not finishing the whole text.
3. Your group will lose points for typos, repeated text, wrongly ordered text, and any holes in the section of the text your group has typed.

Type the text below:

Tiridates I was King of Armenia beginning in AD 53 and the founder of the Artaxiad Dynasty. The dates of his birth and death are unknown. His early reign was marked by a brief interruption towards the end of the year 54 and a much longer one from 58 to 63. In an agreement to resolve the Roman-Parthian conflict in and over Armenia, Tiridates (who was the brother of Vologases V of Parthia) was crowned king of Armenia by the Roman emperor Nero in AD 60; in the future, the king of Armenia

Teammates:

u004

u002

u003

u001

Group chat

Input message... Send

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Example Tasks



01:49 minutes

As a group, please answer the question in the workspace about the picture you just memorized.

1. What instrument is the man on the flying eyeball playing?

2. What color trunks is the blond surfer wearing?

3. How many eyes does the monster holding the black flag have?

4. How many total people and monsters are on the wave in the upper lefthand corner?

5. What type of trees is visible below the flying eyeball?

Teamates:

user1
user2
user3
user4

Group chat

Performance of human groups

Table 1. Correlations among group tasks and descriptive statistics for Study 1. $n = 40$ groups; $*P \leq 0.05$; $**P \leq 0.001$.

	1	2	3	4	5	6	7	8	9
1 Collective intelligence (c)									
2 Brainstorming	0.38*								
3 Group matrix reasoning	0.86**	0.30*							
4 Group moral reasoning	0.42*	0.12	0.27						
5 Plan shopping trip	0.66**	0.21	0.38*	0.18					
6 Group typing	0.80**	0.13	0.50**	0.25*	0.43*				
7 Avg member intelligence	0.19	0.11	0.19	0.12	-0.06	0.22			
8 Max member intelligence	0.27	0.09	0.33*	0.05	-0.04	0.28	0.73**		
9 Video game	0.52*	0.17	0.38*	0.37*	0.39*	0.44*	0.18	0.13	
Minimum	-2.67	9	2	32	-10.80	148	4.00	8.00	26
Maximum	1.56	55	17	81	82.40	1169	12.67	15.67	96
Mean	0	28.33	11.05	57.35	46.92	596.13	8.92	11.67	61.80
SD	1.00	11.36	3.02	10.96	19.64	263.74	1.82	1.69	17.56

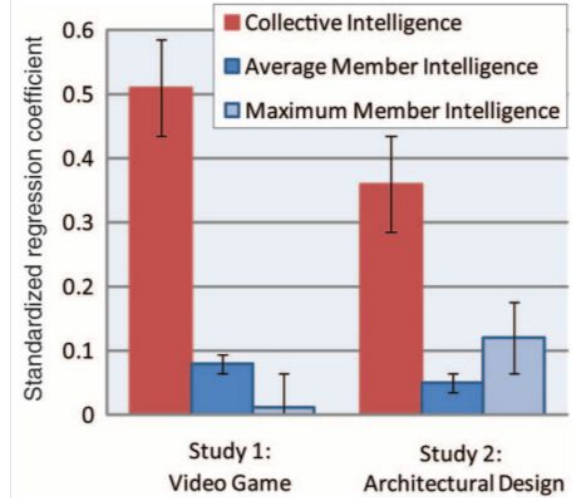
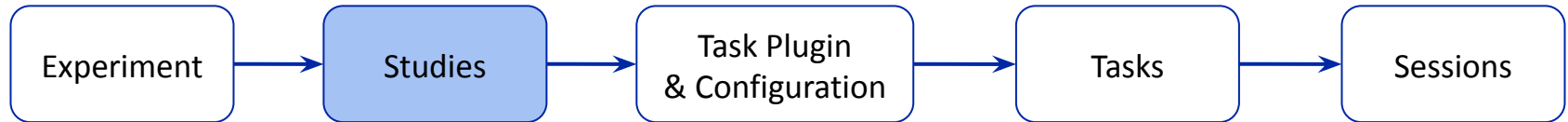


Fig. 1. Standardized regression coefficients for collective intelligence (c) and average individual member intelligence when both are regressed together on criterion task performance in Studies 1 and 2 (controlling for group size in Study 2). Coefficient for maximum member intelligence is also shown for comparison, calculated in a separate regression because it is too highly correlated with individual member intelligence to incorporate both in a single analysis ($r = 0.73$ and 0.62 in Studies 1 and 2, respectively). Error bars, mean \pm SE.



POGS Workflow





POGS/Studies

- Collection of sessions
- Create separate study for sessions related to the experimental conditions
- Different features of study conditions can be configured at various levels
 - Example, enable or disable text chat in one session
- How to create a new study?

POGS Studies Task groups Tasks Admin Sign out

Home / Studies

All studies:

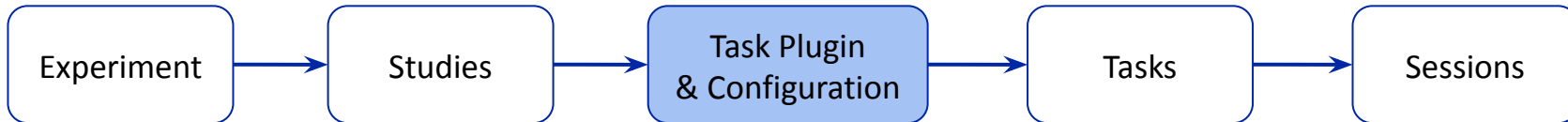
Create new study

Study ID	Study name	Study prefix
7	T1ShortDemo	T1ShortDemo

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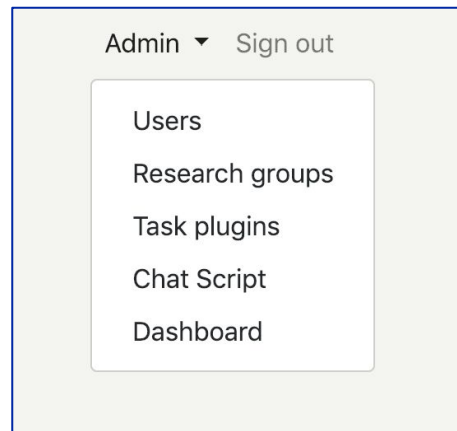
POGS Workflow





POGS/ADMIN

- Users can be assigned to research groups
- Research group
 - Collection of users
 - Can be assigned to task objects
 - New users can be added to existing research groups
- Task plugins
 - Associated with each POGS Task
 - Several types (example, surveyPlugin)
 - Configuration may be created based on what you want from a task



Configuration for : surveyPlugin

Basic

Configuration name:

Advanced

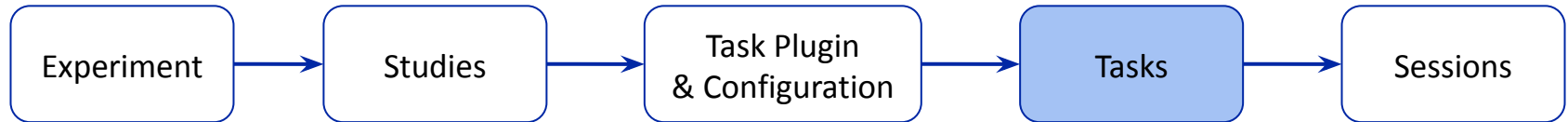
You can use this special variables to enable network functionality:

- **\$(allTeamates)** all of teammates of a given team in a session. If used in the question it will render the list of display names separated by coma. If used in an option, it will be rendered as each teammate as an option.
- **\$(otherTeamates)** all teammates but the current subject answering the survey. This renders as a coma separated list in questions, and separate options if used in options.
- **\$(lastTaskName)** if used in sequential mode, the last task's name, if in parallel it will render an empty string. This way the survey can use it in reference to the last task. Only rendered as text
- **\$(allTasksNames)** all tasks names in the current session. The list will render as coma separated task names or as option items if used in an option field
- **\$(otherTasksNames)** all tasks names but the current survey in question. The list will render as coma separated values or as options if used in an option field.
- **\$(sessionName)** it will render the session suffix.

Create a new question: ☐ With Video



POGS Task Workflow





POGS/Task

Task creation

- **Basic configuration**
 - Task name, Task plugin type, Task plugin configuration, Solo task, Should score
- **Pages**
 - Intro page, Primer page, Interaction page
- **Communication**
 - No chat, Group chat with no constraint, matrix chat constraint, dyadic communication constraint
 - Chat script: act as a bot
- **Collaboration**
 - Todo list, voting poll, collaboration feedback widget

Edit task

Basic

Task Name: textTypingTask

Task Plugin Type: typingPlugin

Task Plugin Configuration: simpleTypingPlugin

Solo Task: ☐

Should Score: ☐

Communication

Communication Type:

Chat script:

- No Chat
- ✓ Group chat channel - No constraint
- Matrix chat - Constraint: matrix
- Dyadic communication - Constraint telephone system

Collaboration

(*)

☒ Collaboration Todo List Enabled ☒ Collaboration Voting Widget Enabled ☐ Collaboration Feedback Widget Enabled



POGS/Task

Task Group

- Tasks must be grouped together to be used in a session
- More details [here](#)

Edit task group

Task Group Name:

Select the task ↕ Add task to task group

Research groups

Available groups

Showing all 11

→ →

- superAdminGroup
- muriResearchGroup
- SynergyGroup
- NoahResearchGroup
- 1234
- MITaffiliates
- CMU_Int_Qs
- CMU_Glow
- EllaGroup
- Researchers Accounts Requested

Chosen groups

Empty list

← ←

Cancel Create task group



POGS Workflow





POGS/Session

- Collection of task groups
- Create a session with
 - Schedule types: for a period of time, or to a specific date
 - Pages: similar to tasks, intro page, ..., done page
 - Task execution: sequential fixed, sequential random, parallel
 - Communication and collaboration

Session subject communication:

-	m01	m02	m03	m04
m01	-	✓	✓	✓
m02	✓	-	✓	✓
m03	✓	✓	-	✓
m04	✓	✓	✓	-

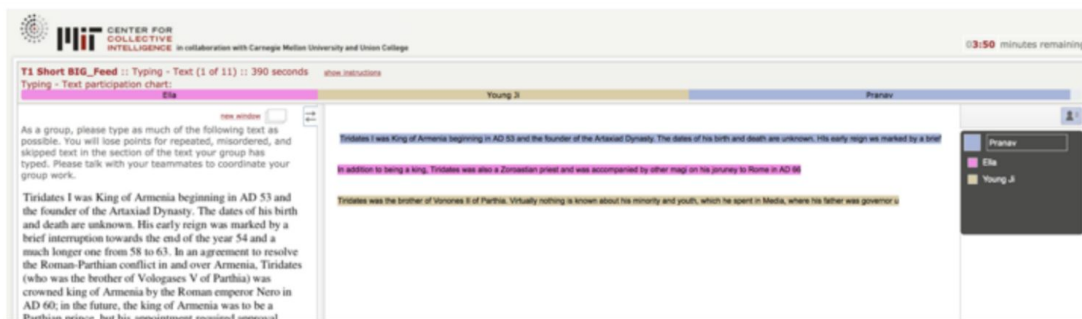


POGS/Session

- Create a session with
 - Feedback
 - Team composition: team creation (specific, random, random based on matrix)
 - Task group: associate it with session
 - Subjects:
 - setup subjects,
 - edit communication constraints,
 - create channel (only selected subjects can view and send messages)



Demo



(a) Automated Effort Feedback Nudge



(b) ToDo Tool Nudge

Fig. 1: Sample screen from the Platform for Online Group Studies (POGS); On the top of the interface the (a) automated-effort-feedback; (b) todo-tool is featured.