JST CREST CyborgCrowd
IMMEDIATE, UNITED, OPTIMIZED

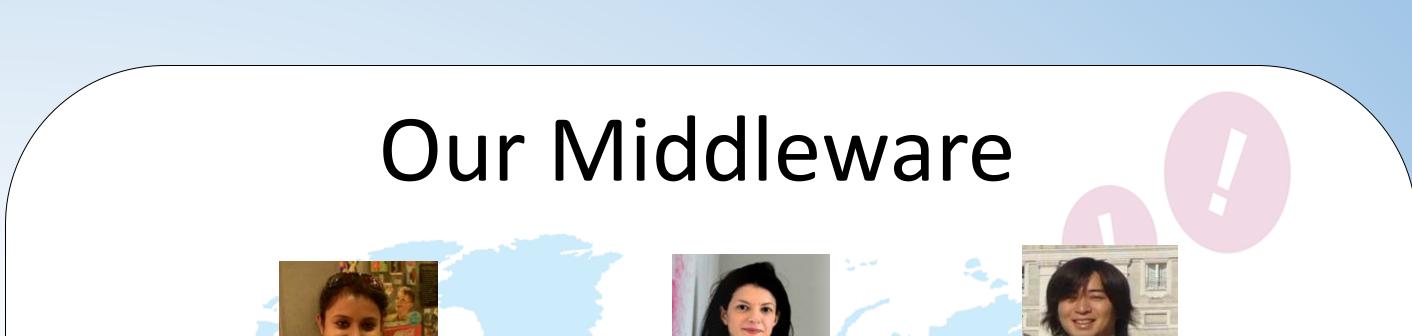# Overview of CyborgCrowd Project

Atsuyuki Morishima*   Keishi Tajima+   Itaru Kitahara*   Munenari Inoguchi #   Masaki Matsubara*   Hidehiko Shishido*

*University of Tsukuba   #Toyama University   +Kyoto University
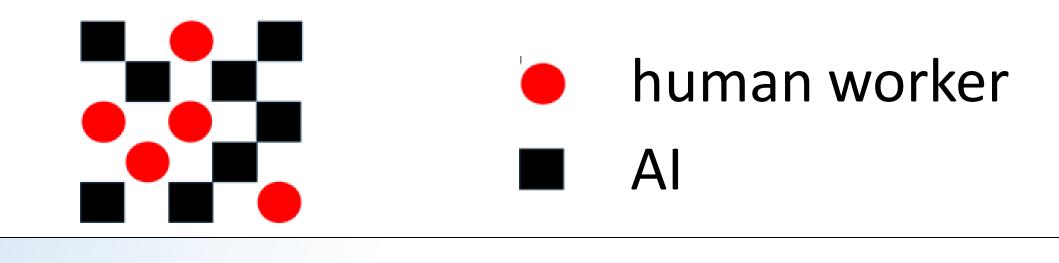
Project Overview

- Funded by Japanese government
- 5 year project (Dec. 2016 to Mar. 2022)
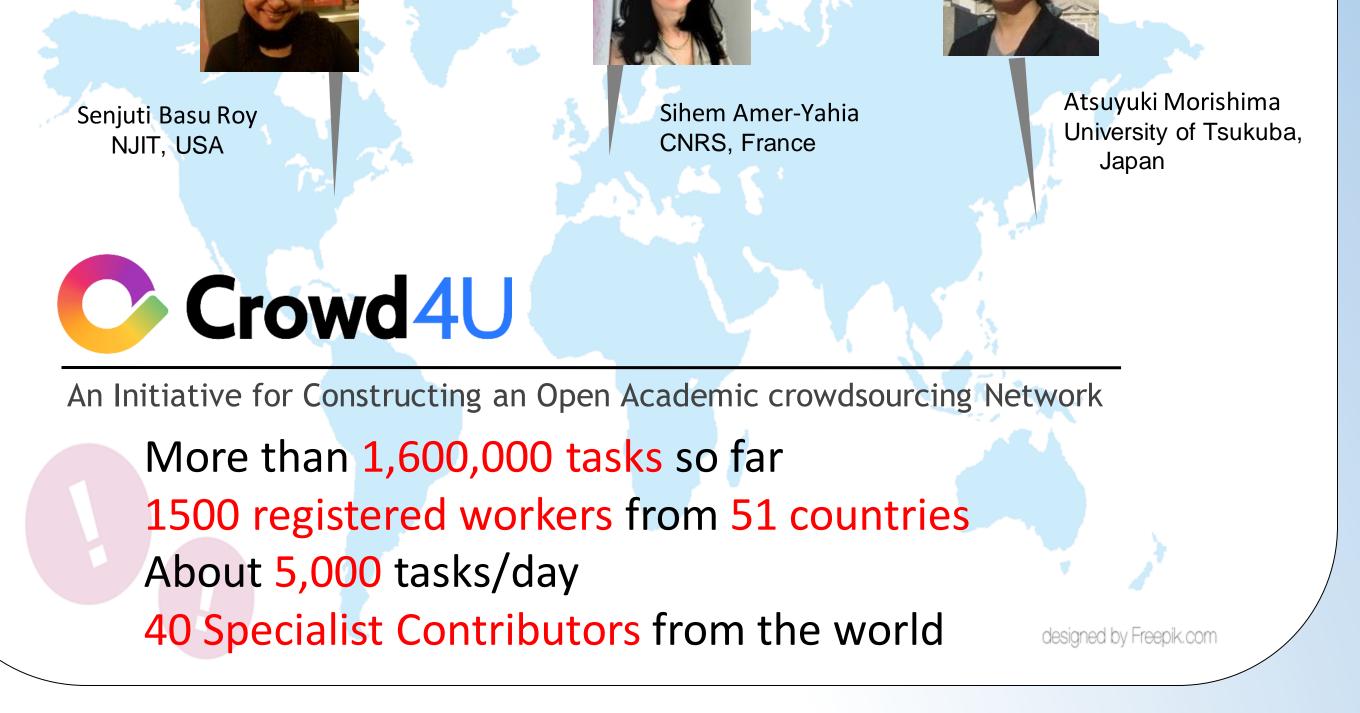- 4 research groups from 3 universities
- About 3M USD

Our Vision

Future: ~~AI replaces human workers~~

Future: AI collaborates with human workers
crowdsourcing + machine learning = CyborgCrowd

- human worker
- AI

Our Middleware

Senjuti Basu Roy
NJIT, USA

Sihem Amer-Yahia
CNRS, France

Atsuyuki Morishima
University of Tsukuba,
Japan

Crowd4U
An Initiative for Constructing an Open Academic crowdsourcing Network

More than 1,600,000 tasks so far
1500 registered workers from 51 countries
About 5,000 tasks/day
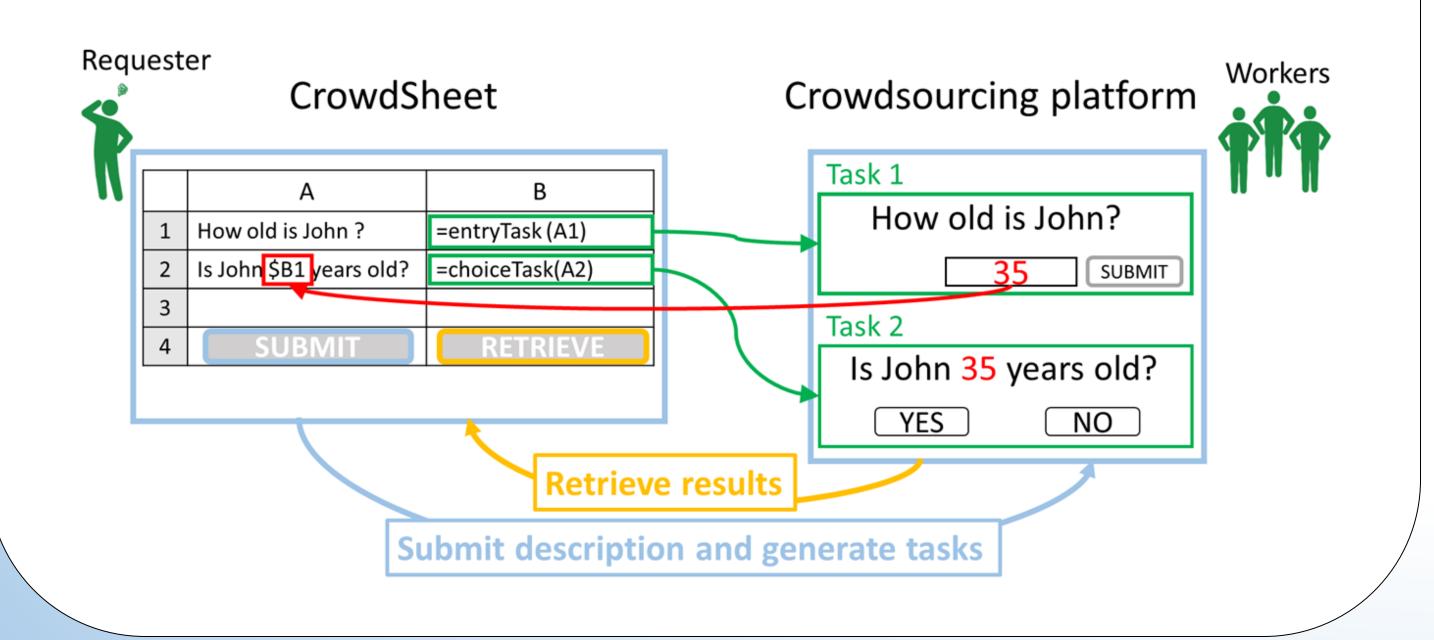40 Specialist Contributors from the world

designed by Freepik.com

Our Mission

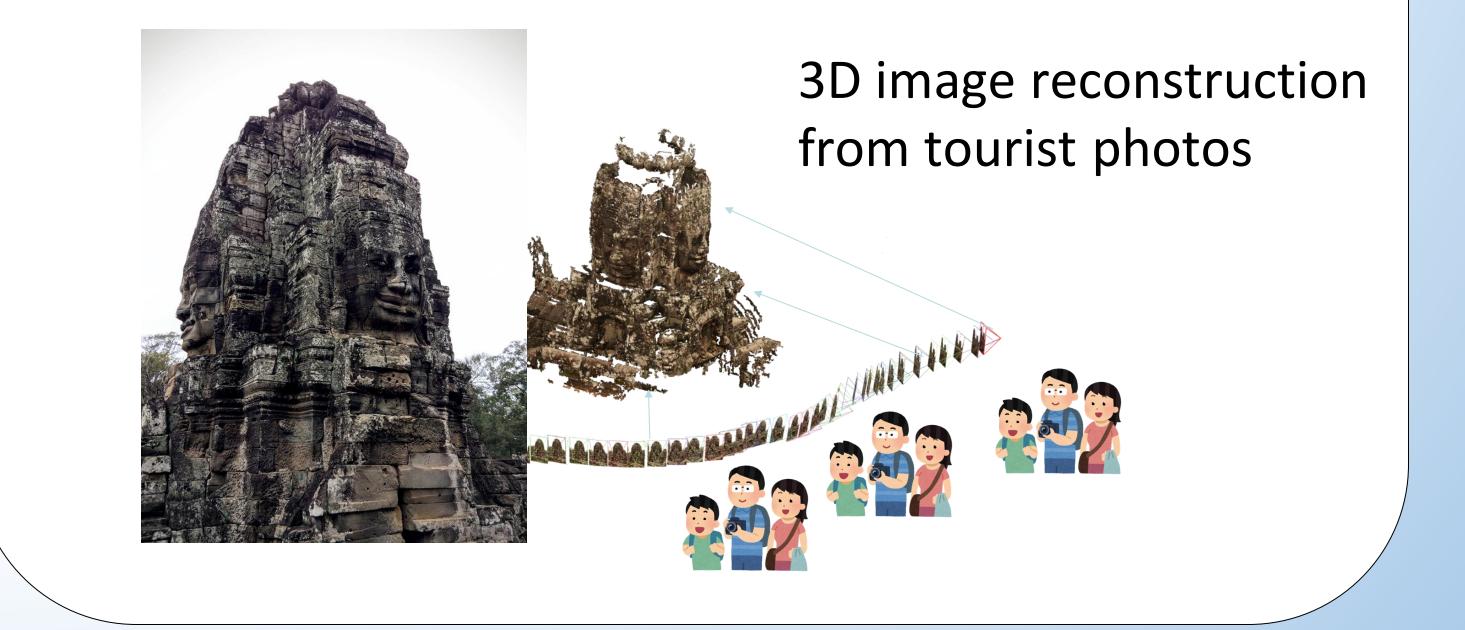We develop a middleware that provides:

- Immediate: easy deployment of new tasks including complex workflow,
- United: crowd and AI integration without any distinction, and
- Optimized: declarative task definition compiled into execution plans adaptive to available work resources

CrowdSheet [ICDE08,CAiSE08]

Crowdsourcing task deployment in 5 min

Requester   CrowdSheet   Crowdsourcing platform   Workers

	A	B
1	How old is John ?	=entryTask (A1)
2	Is John SB1 years old?	=choiceTask(A2)
3		
4	SUBMIT	RETRIEVE

Task 1
How old is John?
35   SUBMIT

Task 2
Is John 35 years old?
YES   NO

Retrieve results

Submit description and generate tasks

World-Heritage Preservation Monitoring by Tourists as a Crowd [HMData 2017]

3D image reconstruction from tourist photos

Transforming a classification task into a hierarchical classification task for best worker assignment [HMData 2017]

All workers perform the same classification tasks with n-choices

Alaska Malamute   Siberian Husky   Samoyed   German Shepherd   Gray Wolf   Coyote   Dhole

Reorganize it into a hierarchical classification task, and assign each worker to their best task

dog lover

wild animal expert

Dogs   Wild Animals

German Shepherd   Alaska Malamute   Siberian Husky   Samoyed   Gray Wolf   Coyote   Dhole

Prompt damage information acquisition for effective disaster response

people in other areas

drone cameras   AI

report from citizens   Crowd4U   Assess reports from citizens and drones

激甚被災エリア？   情報空白エリア？

damage map

prompt decision making

Head Quarter