

TOWARDS A COMPETENCE-BASED APPROACH TO ALLOCATE TEAMS TO TASKS

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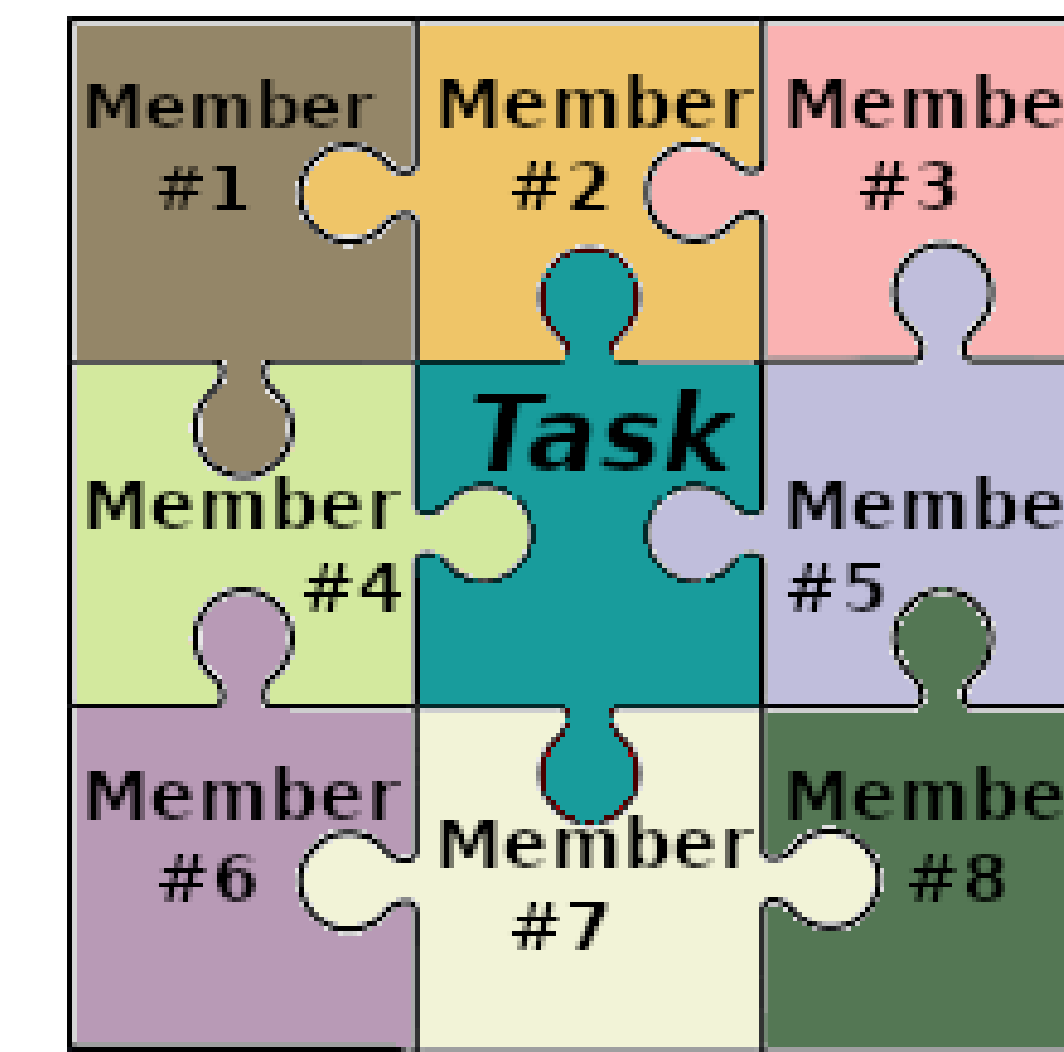
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SUITABILITY: TEAM TO TASKS

The suitability of a team to a task *primarily* depends on the matching between task's required competencies and those collectively offered by the team.

1. Each required competence must be responsibility of at least one team member.
2. Each member contributes to the task by being responsible for at least one competence.
3. Each member must be responsible for a limited number of competencies to avoid overloading.
4. **Agent's suitability** to a task is the **similarity** between the **agent's competencies** and the **agent's responsibilities**.
5. **Team's suitability** to a task is the **product** of the team-members' suitabilities.



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OPTIMISATION PROBLEM

Find an **allocation** that

- (i) allocates one team to each task;
- (ii) each agent can participate **only** in one team;
- (iii) maximizes the **overall suitability**.

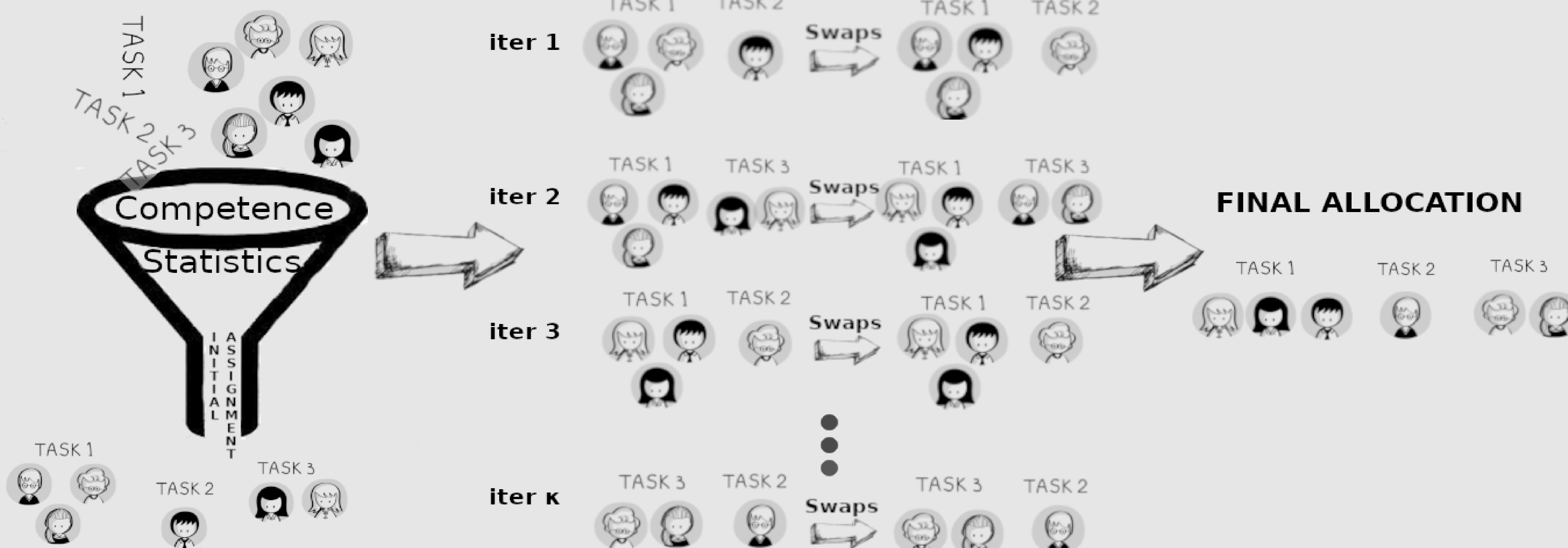
The **allocation's overall suitability** (of teams to tasks) is the **product** of all allocated **teams' suitabilities** to their task.

HEURISTIC METHODOLOGY

INITIAL ALLOCATION

IMPROVE ALLOCATION

FINAL ALLOCATION



SEARCH SPACE

Enormously large search space even for small settings:

For **20 tasks** with team sizes 2, 3, 4, and 5 agents, we have $\sim 10^{59}$ different allocations.

CONCLUSIONS

- ✓ We allocate **teams to tasks**, with **size constraints**, and **no overlaps**.
- ✓ We solve the problem as an **optimisation problem**.
- ✓ We characterise the **size of search space**.
- ✓ We introduce a **heuristic methodology** for solving it.