

# STSM Report

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## 1 Purpose of the visit

The purpose of the visit was to explore the possibilities of using the FAtiMA agent architecture to create an anti-cyberbullying agent. The anti-cyberbullying agent aims at empowering children and adolescents against cyberbullying by helping them cope with their negative emotions (e.g. giving emotional support) on the short term and by teaching them how to deal with cyberbullying (establishing behaviour/attitude change) on the longer term.

## 2 Work carried out

FAtiMA is an architecture for interactive storytelling. A typical scenario in FAtiMA contains multiple agents and the story evolves because the goals of the different agents conflict with each other. The FAtiMA architecture contains an emotional planner. Agents construct and execute plans based on their knowledge and emotions [1].

Prior to the visit, I implemented a simple decision support system linking factual information from cyberbullying situations to pieces of advice. Rules for giving advice are based on common sense. This decision support system was recreated in FAtiMA by implementing a scenario. The scenario contains one agent and the user. The agent asks the user questions and waits for the typed responses. User responses are stored and when sufficient information is gathered, the agent gives advice.

The responses of the user are events that evoke emotions in the agent. Theoretically, the decision support system gives the best advice in every situation. In order to make the anti-cyberbullying agent more believable, the advice given should be affected by the emotions the agent ‘feels’. E.g. when the decision

support system selects advice  $a$  and  $b$  and based on emotions advice  $b$  and  $c$  are selected, the agent should output advice  $b$ . However, it is not straightforward which emotions should be generated in different situations and how these emotions affect the advice given by the agent.

Literature on cyberbullying contains clues on how specific situations affect emotions of victims (e.g. photo/video cyberbullying is considered to have a stronger impact than other forms of cyberbullying[3]) and how victims feel about specific pieces of advice (e.g. victims are often reluctant to tell their parents, because they fear their computer privileges will be taken away [2]). More knowledge on cyberbullying is needed to complete the scenario.

### 3 Results obtained

The main goal of the visit was to explore the possibilities of using the FATiMA agent architecture to create an anti-cyberbullying agent. A scenario for the anti-cyberbullying agent was implemented. Grounded content for the advice and generated emotions is currently lacking, so, the scenario could not be completed. However, valuable insights on working with emotional models and designing emotional agents were gained.

The anti-cyberbullying scenario differs from typical FATiMA scenarios in two ways. First, there is only one agent present. This means that there are no conflicting goals between agents, so, interesting (believable, unpredictable, etc.) behaviour is less likely to emerge. Second, typical scenarios are fictional, whereas the anti-cyberbullying agent should operate in real-life situations. In this stage, it is not clear what these differences entail exactly. However, they should be taken into account when designing the anti-cyberbullying agent.

Another issue is the fact that FATiMA agents are driven by emotions. When an instantiation of a goal (an intention) becomes active, hope to complete the goal and fear of failure are generated. It is not clear whether the anti-cyberbullying agent benefits from emotions like these. More knowledge on how experts and/or peers support victims of cyberbullying is necessary to answer this question.

### 4 Future work

In order to complete the scenario, expert knowledge on how to help victims of cyberbullying is needed. The next step is to consult experts on what emotions should be generated by the anti-cyberbullying agent, what (factual) information needs to be gathered in order to be able to give advice, how to map factual information to advice, and how the generated emotions affect the advice given by the agent.

In the near future, FATiMA agents will be equipped with strategies for emotion regulation. These strategies will allow agents to perform emotion regulation on behalf of other agents and of the user. One of the goals of the anti-cyberbullying agent is to regulate the negative emotions due to cyberbullying incidents, so, these strategies are relevant for the anti-cyberbullying scenario.

## References

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- [3] P.K. Smith, J. Mahdavi, M. Carvalho, S. Fisher, S. Russell, and N. Tippett. Cyberbullying: its nature and impact in secondary school pupils. *Journal of Child Psychology and Psychiatry*, 49(4):376–385, 2008.