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Letter of recommendation for Mr. Mahmoud Mohamed Bahaa

To whom it may concern:

Mr. Mahmoud Mohamed Bahaa spent five months in our research group *Fachgebiet Augmented Reality (FAR)* from April until August 2010. During this time, he wrote his Bachelor thesis with the title "Integration of Markerless Tracking into Global Reference Frames". He was fully integrated in a team embedded in the German BMBF research project AVILUS and leaves TUM for the end of his Bachelor thesis.

The assignment of Mr. Bahaa consisted in the development of a registration method that allows to quickly integrate the position and orientation (pose) measurements of an optical natural feature tracker into the natural coordinate frame associated with the environment. Pose tracking is a basic prerequisite for Augmented Reality. There is a high potential for Augmented Reality in industry where digital CAD models shall be integrated into the worker's view to support working processes during production, maintenance, or quality control. The rendering of the model is thereby adapted in real-time, depending on the worker's viewing perspective as determined by the tracker. The efficient registration of the arbitrary coordinate frame of the feature tracker with the given model coordinate frame is not solved in general yet. Different registration and tracking methods were evaluated in the AVILUS *Tracking Contest* (August 18-26, 2010). FAR participated successfully in this contest, using the methods developed by Mr. Bahaa.

During his stay at FAR, Mr. Bahaa has impressed with his sharp problem solving skills. He is committed to his work and follows intuitive approach towards problem solving. Inquisitive mind and willingness to learn typify his character. I highly appreciated his commitment during the *Tracking Contest*. He has maintained a pleasant relationship with his colleagues. I strongly recommend his inclusion in your organization and wish him the best for his future career. He is also welcome at TUM for his future academic career.

Kindest regards,

(Prof. Gudrun Klinker, Ph.D.)