



Technische Universität München

# CERTIFICATE



of Master's Examination for  
Computational Mechanics

Ms.

**ALAA AHMED KHIDIR BASHIR**

born 15 March 1992 in Al-Ain U.A.E

successfully completed the master's examination  
with an overall grade of 1,4 and the designation

**PASSED WITH DISTINCTION**

The topic of the master's thesis is:

**Investigation of the Turbulent Horseshoe Vortex based  
on LES Data of Flow around a Scoured Bridge Pier**

The thesis received the grade of 1,0.

Information about the degree program and the results  
of the master's examination is available in the enclosed  
Diploma Supplement and Transcript of Records.

München, 18 August 2021  
Chair, Examination Board

(signed by)

Prof. Dr. Gerhard Müller

