Western Norway University of Applied Sciences

Bergen 23.06.2021

Certificate of completion of the 5 ECTS course MMIV-DLN-AI-2021

To whom it may concern

We confirm that Muhammad Ammar Malik has successfully completed the 5 ECTS course *"MMIV-DLN-AI-2021: A hands-on course on artificial intelligence in computational biotechnology and medicine"* given by the Digital Life Norway Research School (https://www.digitallifenorway.org/research-school) over the period April 19th to June 8th, 2021.

The course provided a practical, project-based, hands-on exploration of some state-of-the-art techniques and software frameworks from machine learning, deep learning, biomedical imaging, and network science.

The students worked through a set of coding-based examples delivered through Jupyter Notebook and attended 10 two-hour sessions on Zoom over the course period.

In addition to lectures on topics within the three course modules*, "A hands-on tour of deep learning"*, *"Biomedical imaging in time and space"* and *"Network science"*, the students had to (i) give a short pitch of how they imagined the course content could be applied in their own research, (ii) complete a relatively large team-based course project where they had to write a grant proposal related to precision imaging and personalized medicine in glioblastoma, and (iii) successfully pass an oral exam.

The course content is openly available at https://github.com/MMIV-ML/MMIV-DLN-AI-2021.
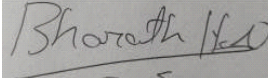
Sincerely,

Recoverable Signature

X _Aleks Ll_

Alexander S. Lundervold
Assoc. professor, course responsible
Signed by: 3e2bfb65-5ca7-40df-b141-782634be3132

Recoverable Signature

X _Bharath H_

Bharath Halandur Nagaraja
PhD, exam sensor
Signed by: 3e2bfb65-5ca7-40df-b141-782634be3132