Letter of Motivation

I am Heena K Patel. I hold master's degree in Mathematics from Veer Narmad South Gujarat University (2011) and 5 years teaching experience in India in two different colleges in India. I had published a research paper on Transient free convective MHD flow through porous medium in flow regime in IOSR journal in which partial differential equation solution by perturbation technique was used. It was funded by GUJCOST.

In order to learn new technique and purse research I came to Finland. I had done second master's in computational engineering Department (2018) at Lappeenranta University of Technology, Finland. I had started my studies on 4 September 2016 to 31 August 2018 and my Master thesis is on Impact of different building roof shapes on gas dispersion in urban street canopy follow the link http://lutpub.lut.fi/bitstream/handle/10024/157080/thesis.pdf?sequence=1. I had design 10 different types of roof. I was awarded living scholarship of 560 euros per month and the distinction prize of 600 euros.

I did an internship at Faculty of Mechanical Engineering Chair of Aero Design Brandenburg Technical University in EU-JAPAN SHEFAE-2 project on topic Reduced order modelling of thermofluid system in aero jet engine from 10 October 2018 to 28 February 2019 with ERASMUS+ scholarship. After that I started my PhD at University of Hamburg in CLICCS project A3: Canopies in Earth System from 1st May 2019. I am working on multiscale finite element methods application to Earth System models. I work with deal. ll C++ library for my research to develop code for urban simulation that can capture subgrid scale features in climate models.

During the summer school I would like to **develop code** for combing OpenFoam library that can be used to simulate urban flows with my current development of numerical method code with deal.ll that is one idea. Another idea that fits summer school theme is to test my method with **NETCDF** data. I had not work with these climate data. It would be nice to work in group to come up with idea so to pre-process data according to my numerical method requirement. Also, it would be help me to develop a **machine learning** algorithm for urban simulation for my project. Since summer school comes with different kinds of topic to explore it will enhance my skills and I will gain a valuable experience.