

## Project proposal template

### Graduate School studentships

### March 2015

|  |   |   |  |
|--|---|---|--|
| <i>Project title</i>   | Application of computer vision techniques for recognition of arteriolar and venules on retinal fundus images. |   |  |
| <i>First Supervisor</i>  | Dr <input type="text" value=""/>  | <input type="text" value="Sarah Barman"/> |  |
| <i>Second Supervisor</i>   | <input type="text" value="Dr Andreas Hoppe"/>   |   |  |
| <i>School</i>  | <input type="text" value="Computing and Information Systems"/>  |   |  |
| <i>Other member of supervisory team<br/>(no more than three KU supervisors in total)</i> | <input type="text"/>  |   |  |
| <i>Specific requirements<br/>beyond 2:1 degree</i>                                       | <input type="text" value="Excellent programming skills."/>  |   |  |

**Project summary**  
**(max 4,000 characters)**

Retinal vessel imaging offers a non-invasive window on the circulatory system of the body. Changes in retinal vessel morphology associated with risk factors for cardiovascular disease emerge in childhood, mirroring changes observed in later life. This PhD project involves the development and assessment of image processing techniques to analyse the characteristics of retinal vessels. The project is part of the Child Heart and Health Study in England (the CHASE study), which aims to link retinal vessel characteristics in over 1000 British primary school children of different ethnic origin, to early risk factors for cardiovascular disease.

The project is designed to build on work already completed within the group in the field of retinal vessel segmentation. The student will investigate a range of novel and established algorithm (including machine learning and registration techniques) that will be designed to detect the differences between arteriolar and venules on retinal fundus images. The project student will be based at Kingston University and will have access to image analysis expertise within the School of Computing and Information Systems. The student will make use of the existing data set and epidemiological and clinical input from St George's, University of London.

