This course will cover fundamental knowledge and advanced topics in image processing and computer vision, including feature detection, segmentation, motion estimation, panorama construction, 3D reconstruction, scene detection and classification, color image processing and restoration. Applications in computer graphics will also be introduced, including image transformation and camera calibration. Basic concepts of related algorithms and mathematic background will be discussed.

本科將會介紹圖像處理和計算機視覺基礎知識和進階主題，包括特徵檢測、圖像分割、運動估計，全景圖構建，三維重搣，場景識別和類分，彩色圖像處理和恢復。本科也將會概觀介紹計算機視覺技術在圖形學的應用，包括圖像變換和相機標定。本科會討論相關算法的基本概念和數學背景。

Grade Descriptor:

EXCELLENT - exceptionally good performance and far exceeding expectation in all or most of the course learning outcomes; demonstration of superior understanding of the subject matter, the ability to analyze problems and apply extensive knowledge, and skillful use of concepts and materials to derive proper solutions.

B+
有关等級說明的資料，請參閱英文版本。

C

FAIR – adequate performance and meeting expectation in all course learning outcomes; demonstration of adequate understanding of the subject matter and the ability to solve simple problems.

D

MARGINAL – performance barely meets the expectation in the essential course learning outcomes; demonstration of partial understanding of the subject matter and the ability to solve simple problems.

F

FAILURE – performance does not meet the expectation in the essential course learning outcomes; demonstration of serious deficiencies and the need to retake the course.

Equivalent Offering:

Units: 3 (Min) / 3 (Max) / 3 (Acad Progress)
Grading Basis: Graded
Repeat for Credit: N
Multiple Enroll: N
Course Attributes: MSc Computer Science

MPhil-PhD Computer Sci & Erg
Learning Outcomes:

At the end of the course of studies, students will have acquired the ability to
1. Understand basic knowledge and algorithms in computer vision.
2. Use Matlab in computer vision programming.
3. Perform image transformation in the color and spatial domains.

Course Syllabus:

This course will cover fundamental knowledge and advanced topics in image processing and computer vision, including feature detection, segmentation, motion estimation, panorama construction, 3D reconstruction, scene detection and classification, color image processing and restoration. Applications in computer graphics will also be introduced, including image transformation and camera calibration. Basic concepts of related algorithms and mathematical background will be discussed.

Assessment Type:

<table>
<thead>
<tr>
<th>Assessment Type</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Essay test or exam</td>
<td>25%</td>
</tr>
<tr>
<td>Others</td>
<td>75%</td>
</tr>
</tbody>
</table>

Feedback for Evaluation:

1. Quiz and examinations
2. Course evaluation and questionnaire
3. Reflection of teachers
4. Question-and-answer sessions during class
5. Student consultation during office hours or online

Required Readings:

To be provided by course teacher.
Recommended Readings:

OFFERINGS
1. ENGG5104
   Acad Organization=CSEG; Acad Career=RPG

COMPONENTS
   LEC : Size=30; Final Exam=Y; Contact=3
   TUT : Size=30; Final Exam=N; Contact=1

ENROLMENT REQUIREMENTS
1. ENGG5104
   Enrollment Requirement Group:
   For students in MSc Computer Science or MPhil-PhD programmes under Faculty of Engineering or UG Computer Science or UG Computer Engineering;
   Not for students who have taken CMSC5711 or CSCI5280

CAF

<END OF REPORT>