School of
Engineering and Computer Science
Te Kura Mātai Pūkaha, Pūrorohiko

Prescription

Image-based graphics brings together the power visual media content to produce vivid, compelling, and meaningful computer graphics. This course studies ways of manipulating and combining images and videos, including image filtering, image manipulation, and video processing.

Course learning objectives

Students who pass this course should be able to:

1. Describe and demonstrate through implementation in software an understanding of the fundamentals of image representation, colour models, pixel-level manipulation algorithms and filtering-based image processing techniques.
2. Describe and demonstrate through implementation in software an understanding of popular image content manipulation methods like image synthesis, seamless image composition and content-aware resizing.
3. Describe and demonstrate through implementation in software an understanding of computational photography technology and advanced imaging techniques, like HDR imaging and light field cameras.
4. Describe and demonstrate through implementation in software an understanding of the fundamentals of feature matching and image warping, and how to perform video enhancement like stabilization. Be able to implement image warping and alignments and a straightforward video stabilizer.

Withdrawal from Course

Withdrawal dates and process:
https://www.wgtn.ac.nz/students/study/course-additions-withdrawals

Lecturers

Fanglue Zhang (Coordinator)

fanglue.zhang@vuw.ac.nz 04 4637527

331 Cotton, Kelburn

Joshua Scott

joshua.scott@vuw.ac.nz

Teaching Format

Lecture based course assessed through substantial practical programming assignments.

Student feedback

Student feedback on University courses may be found at:
www.cad.vuw.ac.nz/feedback/feedback_display.php

Dates (trimester, teaching & break dates)

- Teaching: 02 March 2020 - 07 June 2020
- Break: 13 April 2020 - 27 April 2020
- Study period: 08 June 2020 - 11 June 2020
- Exam period: 12 June 2020 - 27 June 2020

Class Times and Room Numbers

02 March 2020 - 22 March 2020

- **Monday** 10:00 - 10:50 – 202, New Kirk, Kelburn
- **Tuesday** 10:00 - 10:50 – 202, New Kirk, Kelburn
- **Thursday** 10:00 - 10:50 – 202, New Kirk, Kelburn

27 April 2020 - 07 June 2020

- **Monday** 10:00 - 10:50 – 202, New Kirk, Kelburn
- **Tuesday** 10:00 - 10:50 – 202, New Kirk, Kelburn
- **Thursday** 10:00 - 10:50 – 202, New Kirk, Kelburn

Set Texts and Recommended Readings

Required

There are no required texts for this offering.

Recommended

- Computer vision: algorithms and applications, by Szeliski 2010.

Mandatory Course Requirements

There are no mandatory course requirements for this course.

If you believe that exceptional circumstances may prevent you from meeting the mandatory course requirements, contact the Course Coordinator for advice as soon as possible.

Assessment

Assessment Item	Due Date or Test Date	CLO(s)	Percentage
Assessed programming assignment 1	Week 4	CLO: 1	20%
Assessed programming assignment 2	Week 7	CLO: 1,2	30%
Assessed programming assignment 3	Week 10	CLO: 3	20%
Assessed programming assignment 4	Exam period	CLO: 4	30%

Penalties

Assignments submitted after the due date will get a 5% penalty per day, up to one week. After this, zero marks will be awarded for the assignment.

Extensions

Individual extensions will only be granted in exceptional personal circumstances, and should be negotiated with the course coordinator before the deadline whenever possible. Documentation (eg, medical certificate) may be required.

Submission & Return

All work should be submitted through the ECS submission system, accessible through the course web pages. Marks and comments will be returned through the ECS marking system, also available through the course web pages.

Workload

Although the workload will vary from week to week, you should expect to spend approximately 10 hours per week on the course to give a total of 150 hours study time for the course.

Teaching Plan

See: https://ecs.wgtn.ac.nz/Courses/CGRA352_2020T1/LectureSchedule

Communication of Additional Information

All online material for this course can be accessed at https://ecs.wgtn.ac.nz/Courses/CGRA352_2020T1/

Links to General Course Information

- Academic Integrity and Plagiarism: https://www.wgtn.ac.nz/students/study/exams/integrity-plagiarism
- Academic Progress: https://www.wgtn.ac.nz/students/study/progress/academic-progess (including restrictions and non-engagement)
- Dates and deadlines: https://www.wgtn.ac.nz/students/study/dates
- Grades: https://www.wgtn.ac.nz/students/study/progress/grades
- Special passes: Refer to the Assessment Handbook, at https://www.wgtn.ac.nz/documents/policy/staff-policy/assessment-handbook.pdf
- Statutes and policies, e.g. Student Conduct Statute:

https://www.wgtn.ac.nz/about/governance/strategy

- Student support: https://www.wgtn.ac.nz/students/support
- Students with disabilities: https://www.wgtn.ac.nz/st_services/disability/
- Student Charter: https://www.wgtn.ac.nz/learning-teaching/learning-partnerships/student-charter
- Terms and Conditions: https://www.wgtn.ac.nz/study/apply-enrol/terms-conditions/student-contract
- Turnitin: http://www.cad.vuw.ac.nz/wiki/index.php/Turnitin
- University structure: https://www.wgtn.ac.nz/about/governance/structure
- VUWSA: http://www.vuwsa.org.nz

Offering CRN: 30096

Points: 15
Prerequisites: CGRA 251; COMP 261 or NWEN 241
Duration: 02 March 2020 - 28 June 2020
Starts: Trimester 1
Campus: Kelburn