

WEBER LIU

Medical Student (University of Sydney Stage 2)

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JOB EXPERIENCES

TUTOR AND
DEMONSTRATOR
(February 2019 – Current)

CASUAL
DEMONSTRATOR,
CURRICULUM AND
RESOURCE
DEVELOPMENT
(July 2018 – November 2018)

CASUAL
DEMONSTRATOR
(February 2018 – July 2018)

University of Sydney (Camperdown)

Subject: Key concepts in Physiology (PHSI2007/MEDS2001)

- Helped develop and deliver an Arduino maker workshop to physiology students over a period of 4 days

Subject: From Molecules to Ecosystems (BIOL1007)

- Delivering a series of basic Java programming tutorials to introductory biology students in the application 'Processing'

University of Sydney (Camperdown)

Subject: From Molecules to Ecosystems Special Studies Program (BIOL1997)

- Re-designed the previous tutorial series involving visualisation of protein structures in Virtual Reality (VR) based on data collected from the previous year
- Created a series of videos to explain the process of game creation in Unity3D including animation, hit-boxes and collisions
- Delivered the tutorial series to over 80 students

Subject: Frontiers in Whole Body Physiology Advanced (PHSI3911)

- Co-ordinated groupwork between 10 third year students to develop two Virtual Reality exergames
- Provided assistance to develop and test hypotheses and supervised data collection
- Helped develop relevant scripts for data collection and lead exergame optimisation

University of Sydney (Camperdown)

Subject: Human Biology (BIOL1007)

- Developed a tutorial series involving video development using Adobe Slack to over 200 students
- Delivered a tutorial series involving data analysis from live data trackers in the Processing language (Java) to over 200 students
- Ran live programming workshops

CASUAL
DEMONSTRATOR,
CURRICULUM AND
RESOURCE
DEVELOPMENT
(July 2017 – November 2017)

EDUCATION

MASTER OF SCIENCE
IN MEDICINE
(CLINICAL
EPIDEMIOLOGY)
(February 2019 – Current)

DOCTOR OF
MEDICINE
(July 2018 – Current)

BACHELOR OF
SCIENCE
(2015 – 2017)

HIGHER SCHOOL
CERTIFICATE
(2009 – 2014)

University of Sydney (Camperdown)

Subject: From Molecules to Ecosystems Special Studies Program (BIOL1997)

- Co-created a tutorial series involving the visualisation of protein structure in VR using the Oculus rift and Unity – the first of its kind in Australia
- Worked with Blender3D animators to produce a pipeline for protein modelling in ePMV to visualisation and manipulation in VR for over 80 students
- Analysed marking and feedback matrices to improve further iterations of this tutorial series

Subject: Frontiers in Whole Body Physiology Advanced (PHSI3911)

- Worked closely with third year Advanced Physiology students to develop a custom VR game to be used in real-time data capture and analytics
- Taught a small tutorial group (6 students) the principles of game design, Blender3D model development, Unity game development and programming in C# language
- Performed data collection using the Zephyr activity tracker

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University of Sydney (Camperdown)

University of Sydney (Camperdown and Westmead Clinical School)

Awards: Vice Chancellor's Scholarship, Sydney Medical School Summer Research Scholarship

University of Sydney (Camperdown)

Final year WAM: 87.4

Majors: Anatomy and Histology, Physiology

Awards: Vice Chancellor's Scholarship, Dean's list of Academic Excellence

Sydney Boys High School (Surry Hills / Moore Park)

ATAR: 99.95

State ranks: Chemistry (19th in NSW)

HSC Subjects: Chemistry, Physics, Advanced English, Advanced Mathematics, Extension I Mathematics, Extension II Mathematics

Awards: Lennie Bassar Award for Scientific Initiative

INVOLVEMENTS AND EXPERIENCE

RESEARCH STUDENT

(November 2018 – February 2019)

ACRF Image-X Institute (Australia technology park)

Project: A comprehensive study of patient-specific motion modelling for real-time volumetric imaging

Research supervisors: Dr. Andy Shieh

- Developed scripts in MATLAB to batch process 4D CT for image registration, transformation, and analysis
- Generation and analysis of Deformation Vector Fields using MATLAB and Elastix toolkit
- Segmentation of lung and body-masks in Slicer3D for CT scans
- Implemented principle component analysis to create a lung model based on pre-treatment and intrafractional cone-beam CTs

VOLUNTEER RESEARCH LEAD AND LEAD DEVELOPER

(March 2018 – July 2018)

University of Sydney ICT TechLab and School of Physiology collaboration

- Organised a University of Sydney Dalrymple Showcase with Professor Philip Poronnik (School of Physiology), Professor Peter Thorn (School of Medicine) and Jim Cook (ICT TechLab) to introduce first year BSc students to the basics of Blender modelling, Unity3D development with Vuforia, GitHub and C# programming language
- Involved in coordination and development of a curriculum for students of different backgrounds and skillsets in producing an Augmented Reality application

VIRTUAL REALITY WORKSHOP PRESENTER

(December 2017)
(December 2018)

Biosciences Education Australia Network Forum (Canberra)

- Ran a workshop demonstrating the creation of a simple VR application for over 30 scientists from tertiary education institutes around Australia
- Ran a 2 day demonstration of VR applications developed in BIOL1997, PHSI3911 and Westmead Children's hospital, as well as 360 video recorded across the university for the VCRR

VOLUNTEER RESEARCHER AND DEVELOPER

(July 2017 – November 2018)

University of Sydney ICT TechLab, School of Physiology and Westmead Children's Hospital (EPICLab) collaboration

Research supervisors: Dr. Tegan Cheng (EPICLab), Professor Philip Poronnik, Professor David Winlaw

- Developed a complete standalone Virtual Reality Application for the University of Sydney Vice Chancellor's Recognition Reception, demonstrating the use of the Oculus Rift in 360 video and Virtual Reality modelling and gaming
- Presented the applications of VR at the Vice Chancellor's Recognition Reception to over 100 USYD alumni
- Worked with the ICT TechLab to plan the UI for the application and developed, tested and optimised code in C# to ensure functionality and simplicity
- Created a simplistic workflow from CT and MRI scans of foetal hearts through segmentation and volume rendering in VR
- Implemented Quadric edge mesh decimation techniques to improve mesh and UV rendering speeds in VR

**VOLUNTEER
PROJECT MANAGER**
(May 2017)

**VOLUNTEER
RESEARCHER**
(March 2017 – June 2017)

**VOLUNTEER
RESEARCHER**
(July 2015 – November 2015)

SKILLS AND ACHIEVEMENTS

UNITY3D DEVELOPER

BLENDER 3D

JAVA, PROCESSING

MATLAB, SLICER3D

University of Sydney, Ramus and Vivid Sydney collaboration

Project name: Many hands make light work

- Management of a team of 4 students in re-programming and re-designing a Vivid light instalment for World Square

University of Sydney Medical Foundation Building and NSW Brain Bank Collaboration

Research supervisors: Professor Philip Poronnik, Professor Jillian Kril

- Designed a research hypothesis and gained experience in Bradford Protein Assay and Western Blotting in determining concentration of UBR5 in human brain tissue specimen from the NSW Brain Bank
- Analysed and presented results and implications to a panel of academics

University of Sydney Anderson Stuart Building

Research supervisor: Associate Professor William Phillips

- Learned immunohistochemistry techniques and created histological slides from paraffined and frozen animal tissue samples
- Used ImageJ to distinguish between damaged and healthy cell types and analysed results using Graphpad Prism software
- Analysed results and presented to a panel of academics

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Unity3D Certification ID: 201708UCD2659

Involved in the development of VR courses (BIOL1997, PHSI3911), AR courses, and development of VR showcases

Demonstrated Blender 3D as part of BIOL1997

Completed introductory INFO1103, demonstrated Processing in BIOL1008

CT analysis in EPICLab collaboration and ACRF Image-X research