Welcome: Day One Introduction

Steffan Hooper

Wednesday, 22 July 2015

Steffan Hooper

- My contact details:
  - Email: steffan.hooper@aut.ac.nz
  - City Campus Office: WT117D
  - South Campus Office: MB309A

- 2015, Semester 2:
  - 405701 Programming 1
  - 735318 Programming for Engineering Applications
  - 717310 Game Programming

My Background

- Education:
  - Bachelor of Science, University of Canterbury
    - Major in Computer Science
  - Graduate Diploma of Game Development, Media Design School
    - With specialisation in Game Programming
- Currently, in progress:
  - Master of Philosophy, AUT University
    - Creative Technologies (CoLab)

My Background

- AUT Profile:
  - `https://www.aut.ac.nz/profiles/steffan-hooper`
- Previously:

AUT	Foundation Programming	Foundation Algebra	Programming 1	Programming 2	Program Design and Construction	Game Programming
2015 Semester 1	✓ South		✓ South	✓ South	✓ South	
2014 Semester 2	✓ South		✓ South		✓ South	✓ City
2014 Semester 1	✓ South	✓ South	✓ South		✓ South	
2013 Semester 2		✓ South	✓ South	✓ South		

My Background

- Previously:
  - Senior Lecturer at Media Design School
    - 2006 to 2013:
      - **Diploma of Interactive Gaming**
        [Level 6, 145 credits]
      - **Graduate Diploma of Game Development**
        [Level 7, 256 credits]
      - **Bachelor of Software Engineering** (Game Programming)
        [Level 7, 420 credits]
      - **Bachelor of Creative Technologies** (Game Art)
        [Level 7, 420 credits]
    - Mentored student game development projects…

My Background

- Programming Languages:
  - C, C++, Java, C#, Objective-C, various assembly languages…
- Development Environments:
  - Microsoft Visual Studio (VC++5 to 2013), Apple Xcode
- 3D Graphics API:
  - DirectX, OpenGL
- Middleware:
  - RenderWare, Gamebryo, Havok, PhysX, FMod, Box2D…
- Console:
  - Sony PlayStation Portable, Sony PlayStation 2, SN Systems
  - Sony PlayStation Vita, PlayStation Mobile

My Background

- Game Development:
  - Shear Factor (Windows PC)
    - Game Programming:
      - C++
      - Microsoft's DirectX
      - Criterion's RenderWare
      - SF Game Framework
      - Game play, AI, physics, UI, UX, middleware integration, tools.
    - Tools Programming:
      - C++, Java, Maya Embedded Language, Batch Scripting
    - Project scheduling, task tracking, team management.

My Interests

- Education:
  - Computer Science, Software Engineering
- Game Development:
  - Video Game Consoles, Mobile Devices
  - Engine Development
  - Real-Time Rendering
  - Physics Simulation
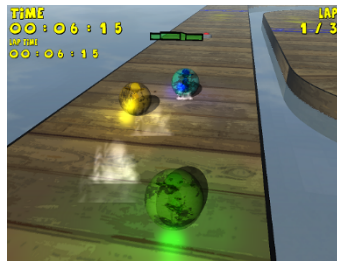 - Code Profiling
  - Middleware Integration
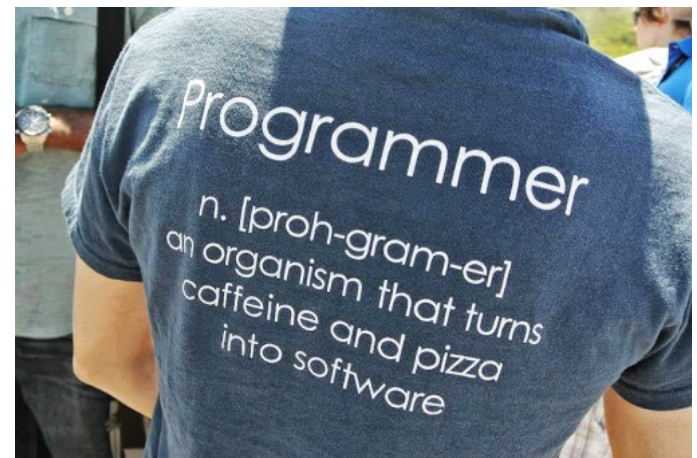
My Previous Students' Projects

- Game Development Production Projects…
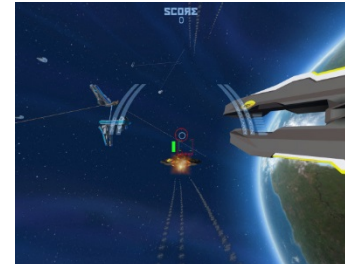 - Diploma of Interactive Gaming (5 teams out of 19):

Happy Traps

Oddballs

Loop Troops

The Uprising

Cygni

  - Graduate Diploma of Game Development (5 out of 35):
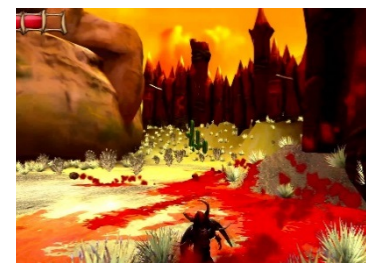

Roadblock

Sklum Lord

Discord

War of the Woods

Giraffic Park

My Previous Students' Success

PIGsty

- PIGsty: AUT Play & Games Lab
  - **`http://pigsty.aut.ac.nz`**
  - Research lab devoted to supporting AUT play, interactivity and games related projects.
    - Connects students and staff to industry partners, funding and research support for creative, commercial and humanitarian projects.
  - Exists across the following DCT Schools:
    - Colab: Creative Technologies
    - Art & Design
    - Computer and Mathematical Sciences

Who are you?

- Please introduce yourself!
- Who are you?
- What area are you studying?
  - What programming languages do you know?
- Why did you choose to study game programming?
- What do you expect from the course?
- Have you programmed any games before?

717310 Game Programming

- Overview:
  - A practical foundation in game programming, using a variety of game development tools and programming libraries, and deploying games on a variety of platforms.

- Student Learning Hours:
  - On Campus Sessions: 48 hours.
  - Student Directed Learning: 102 hours.

717310 Game Programming

- Level 7, 15 credits.
  - 4 hours directed study per week.
  - At least 6 hours self-directed study per week.
    - Based on 15 weeks…
  - Total Learning hours: 150.

- Lectures and Labs:
  - Wednesday, 2pm to 4pm, WT206.
  - Thursday, 4pm to 6pm, WT206.

717310 Game Programming

- Level 7: Knowledge
  - Specialised technical or theoretical knowledge with depth in one or more fields of work or study.

- Level 7: Skills
  - Analyse, generate solutions to unfamiliar and sometimes complex problems.
  - Select, adapt and apply a range of processes relevant to the field of work or study.

- Level 7: Application (of knowledge and skills)
  - Advanced generic skills and/or specialist knowledge and skills in a professional context or field of study.

717310 Game Programming

- Learning Outcomes:
  - Design and implement a single player computer game with advanced interaction, graphics, and animation features.
  - Design and implement a computer game for hardware platforms other than desktop PC.
  - Design and implement a multi-player computer game as part of a game development team.

717310 Game Programming

- Content:
  - History of computer games
  - Computer game platforms
  - Game programming tools and libraries
  - Graphical effects for computer games
  - Artificial intelligence for computer games
  - Physics in games
  - Multiplayer games
  - Console game programming
  - Mobile game programming

717310 Game Programming

- Assessments:
  - Assignment 1: Single player game
    - 20% Weighting, Individual Assignment
  - Assignment 2: Alternative platform game
    - 30% Weighting, Individual Assignment
  - Assignment 3: Multiplayer game
    - 50% Weighting, Group Assignment

  - Students must achieve a minimum of 35% in each assignment, and at least a C- (50%) overall.
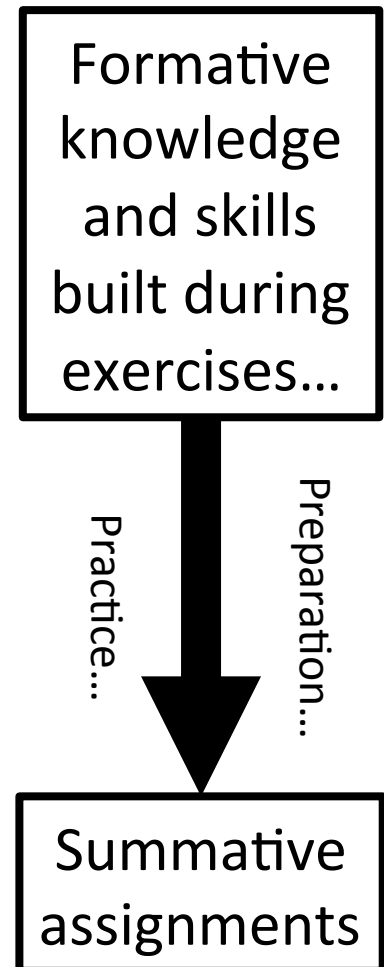
717310 Game Programming

- Lab Exercises vs Assignments
  - Lab Exercises:
    - Formative…
      - Practice, experiment, make mistakes, refine
    - On-campus, scheduled, lab work…
    - Self-directed, homework…
  - Assignments:
    - Summative…
      - Counts towards the final grade!
    - Self-directed…

Formative knowledge and skills built during exercises…

Practice…   Preparation…

Summative assignments

717310 Game Programming

- Readings - Prescribed Text:
  - Rabin, S. (2010). *Introduction to Game Development* (2nd ed.)*.* Portland, OR: Cengage Learning.
  - Gregory, J. (2009). *Game Engine Architecture.* Natick, MA: A. K. Peters/CRC Press.
  - Schwab B. (2008). *AI Game Engine Programming* (2nd ed.). Boston, MA: Cengage Learning.
  - Sanchez-Crespo, D. (2003). *Core Techniques and Algorithms in Game Programming.* Indianapolis, IN: New Riders Games.

717310 Game Programming

- Readings - Prescribed Text:
  - Millington, I. (2007). *Game Physics Engine Development.* Boston, MA: Morgan Kaufmann.
  - Finney, K. (2007). *3D Game Programming – All in One* (2nd ed.). Boston, MA: Thomson/Course Technology.
  - Sherrod, A. (2008). *Game Graphics Programming*. Boston, MA: Course Technology/Charles River Media/Cengage Learning.

Class times

- Morning classes:
  - Start on the hour.
  - Finish 10 minutes before the hour.
  - For example: 10:00am to 10:50am
- Afternoon classes:
  - Start 10 minutes after the hour.
  - Finish on the hour.
  - For example: 2:10pm to 3:00pm

Being a Student…

- Tertiary Study: A University Student.
- Be Proactive!
  - Adult learning environment…
  - Life-long learning…
- Make Continual Engagement and Iteration:
  - "Fail fast, fail often" … get better all the time!
  - Do not give up… become successful!
- Be Curious.
  - Collect Knowledge.

Being a Student…

- Goals…
  - Plan.
  - Accomplish.
- Plan:
  - Who, What, When, Where, How.
- Accomplish:
  - Measurable and actionable objectives.

Being a Student…

- Attendance…
  - Lectures, Labs, Tests, Exams…
  - Come to class prepared.
    - Maximise the time, do not waste the opportunity!
- Communication:
  - Seek Help: Lectures, Labs, Peers, Faculty…
- Peers:
  - Learn from your fellow students.
- Programming…

Being a Student…

- Learning…
  - Listen.
  - Respond.
- Time management…
  - Plan.
  - Accomplish.
- Self-directed study…
  - Required.

Being a Student...

- How to write an email...
  - To: The person who should respond to your email.
    - CC: Anybody who is relevant to the conversation.
    - BCC: Do not just use this and leave cc: and To: blank!
  - Subject: Overview topic of the email content.
    - Start the subject with: `GP:` ←

    Help me identify your emails in my inbox!
  - Body: The email message... be polite!
    - Spell check! Proof read! It's a document!
    - Hello... Sign off... Name, Course, Student ID.
- Check your AUT email... and reply!

Being a Student…

- If you are going to miss class…
  - Be proactive!
  - Send me an email before class!
    - Let me know that your unable to come for whatever acceptable reason…
  - Be responsible for your own catch up!!!
- However, do not miss class!
  - Student Experience Team will be engaged to chase you!
  - Attend all sessions!

Student Services:
Student Experience Team (SET)

SET (Student Experience Team) is here to support your academic journey toward success. The role of SET is to work with this faculty to follow up on student progress and to inform students of any services that will help you maximise your academic potential.

You may get a call from the SET if :

You have not been able to access AUTOnline

You may have missed a class in the first four weeks

You may have forgotten to submit an assessment or attend a test

You didn't quite pass an assignment or test (i.e. scoring less than 50%)

As your lecturer, I want you to succeed so…

you may receive a friendly phone call/ email/ text from SET (all senior students) in order to ensure you have the necessary information and services to help you pass this paper.

Being a Student…

- Special Consideration
  - Late submissions…
  - Unable to attend an assessment item (e.g.: test)

- Carefully and accurately complete the form…
  - Supply appropriate supporting evidence.

- Be proactive!
  - Do not leave it to the last moment!

Academic Integrity

- Honestly and truthfully submission of work.

- Work must be your own.

- Do not present other's work as your own!

- Beware:
  - Plagiarism...
  - Copying any part or whole of someone else's work!
  - Cheating in a test or exam...

Academic Integrity

- Always acknowledge the ideas of others…
  - Text, Images, Figures, Source Code, …
  - Conduct referencing / citing.
    - Bibliography

- When working on your programming assignments…
  - Do not copy your fellow student's code!
  - Or code from the internet…
  - All work submitted must be your own!

Example Game Industry Job Posting

- June 2015: PikPok, Wellington, New Zealand

Programmer

PikPok is looking for talented Programmers to join our world beating mobile game dev team!

The ideal candidate should have a portfolio of Game Development work: Hobbyist, Indy or Professional. You will need to have a passion for Video Games, and a solid understanding of the fundamentals of game systems. You should enjoy working in a team, and should be willing to undertake any and all tasks in order to help produce a quality experience on time.

Responsibilities:
- Work alongside artists and designers to create quality PikPok signature experiences.
- Work in a team with guidance and direction from Senior Programmers.
- Learn and develop any game systems as required.
- Work with Project Tech Leads to estimate and plan work.

Requirements:
- Fluent in C++ or C#.
- High aptitude for learning new skills.
- Understanding of software architecture and design principles.
- Strong communication skills.
- Able to talk through problems and collaborate in system design.
- Experience with Debugging tools and practices.
- Visual Studio and/or Xcode experience.
- Good understanding of version control systems (SVN and GIT).
- Writes good readable code.
- Must be a New Zealand resident or have relevant Visa.

Bonus Points:
- Professional or Indy game development experience.
- Experience in Unity3D.
- Experience in content creation tools - Maya, 3DS Max, After Effects.
- Foosball Skills.
- Likes Coffee (Wellington has the best coffee in the World).

Contact:
Please send your application along with a digital copy of your resume/CV to: careers@pikpok.com.
Additional contact details can be found below and by visiting us online at www.pikpok.com

Actual real-world job posting…

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C++ or C#

Software Engineering

IDE!

Version Control

Team work!

Continual learning…

Scheduling…
Estimate…
Plan…
Project Management!

Debugging experience

Quality code!

Example Game Industry Job Posting

- June 2015: PikPok, Wellington, New Zealand

Bonus Points:

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Phone: +64 4 471 2638 · Fax: +64 4 471 2639 · Online: Website · Facebook · Twitter · Linked in · YouTube · Instagram

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Work samples beyond the expected university projects…

Sense of humour

Content creation tool experience

Phone: +64 4 471 2638 · Fax: +64 4 471 2639 · Online: Website · Facebook · Twitter · Linked in · YouTube · Instagram

Example

- July 2015: Gameloft, Auckland, New Zealand

Lead Game Programmer | Auckland

Gameloft | Expires 15 July 2015

This position is located in Auckland, New Zealand. Please apply now and send your CV to know more about it.

Primary Responsibilities
- Developing game applications in C and C++
- Design and implementation of required game modules
- Collaboration and communicate with game designers on implementing features to a vision
- Accurate estimation and task breakdowns

PROFILE

Required Skills:
- C/C++ Programming
- Completion of at least one game title
- Excellent communication skills
- Fluent English speaker
- Organized and self motivated
- Accurate task estimation and scheduling ability
- Worked with and comfortable mentoring junior developers

Example

- July 2015: Gameloft, Auckland, New Zealand

Career-wise, looking to the future…

Lead Game Programmer | Auckland

GAMELOFT

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C or C++

Plan and program…

Written, Spoken, Non-verbal…

Complete game…

Team work!

Scheduling… Estimate… Plan… Project Management!

Mentoring!

Example

- July 2015: Gameloft, Auckland, New Zealand

Advantage points :
- Degree or 6+ years development experience in software or computer systems engineering
- Shipped one or more Xbox360, PS3 titles, or multiple iOS/Android titles
- Developed own technology or game titles in your spare time
- A love of video gaming (mobile, console and desktop)
- Hansoft or other task tracking software

Why Join Us
- Very attractive remuneration
- Exciting studio activities to make work fun
- We welcome overseas applicants

Example

- July 2015: Gameloft, Auckland, New Zealand

A degree… or at least six years experience…

Lots of mobile game development experience…

Console game development experience

Project management tools!

Passion for all games!

Interesting hobby projects…
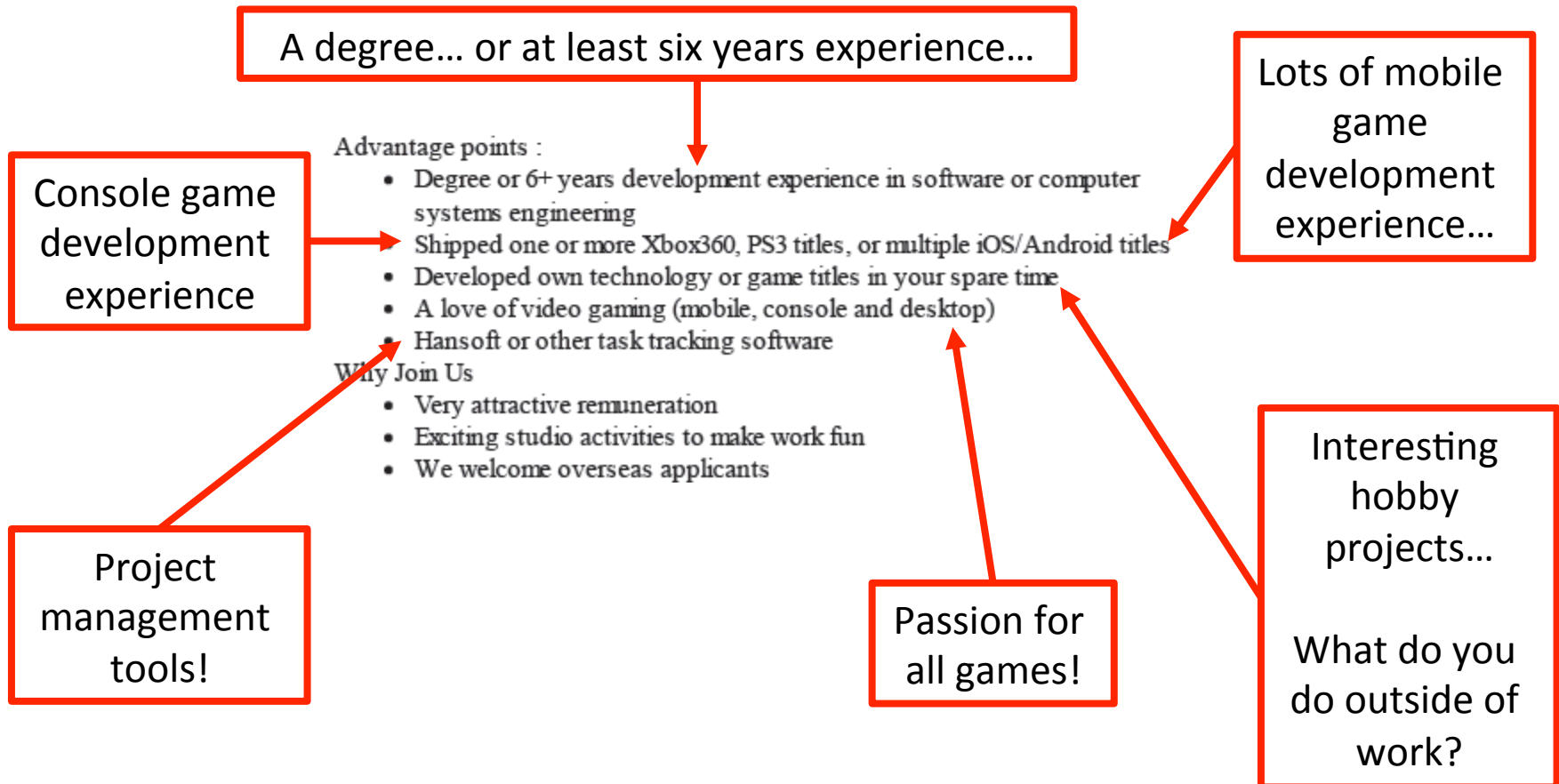
What do you do outside of work?

Advantage points :
- Degree or 6+ years development experience in software or computer systems engineering
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Summary

- My Background

- My Interests

- Paper Introduction

- Being a Student

- Academic Integrity

- Example Game Industry Job Posting