Welcome

PRESS START
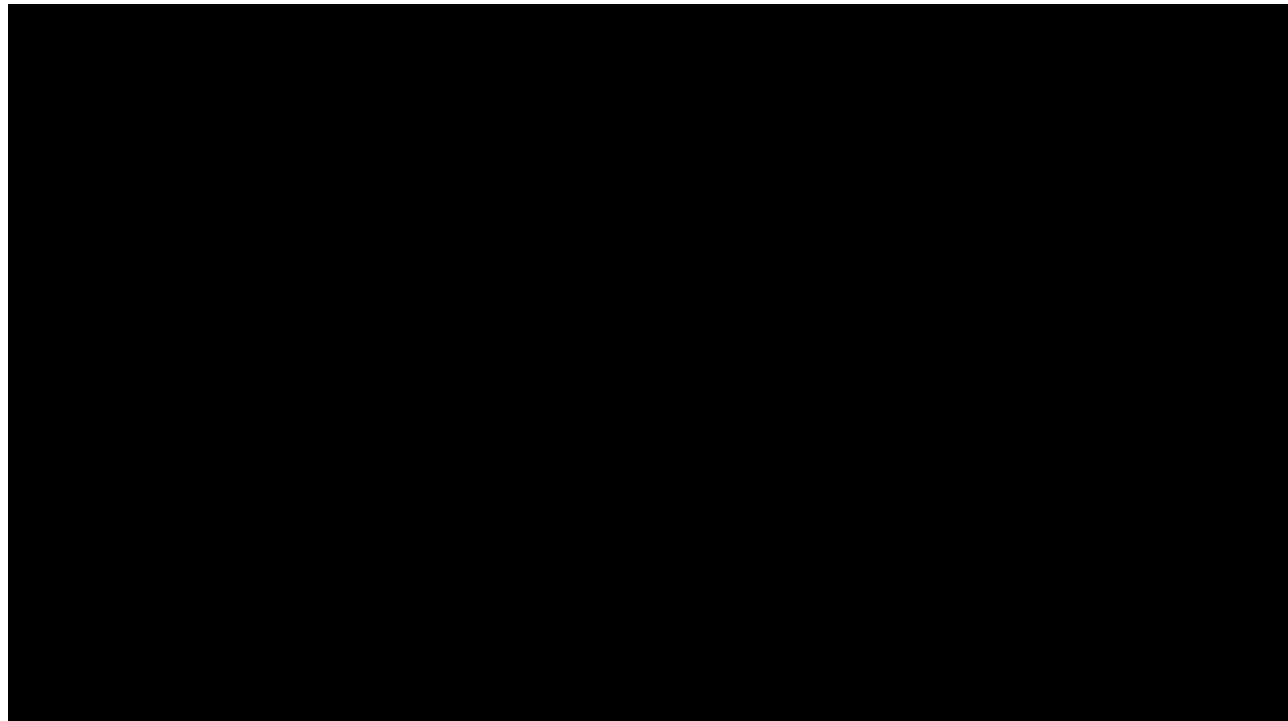
WPI Interactive Media and Game Development

1

Welcome

Dr. Jennifer deWinter
Director, IMGD Program
jdewinter@wpi.edu

WPI Interactive Media and Game Development
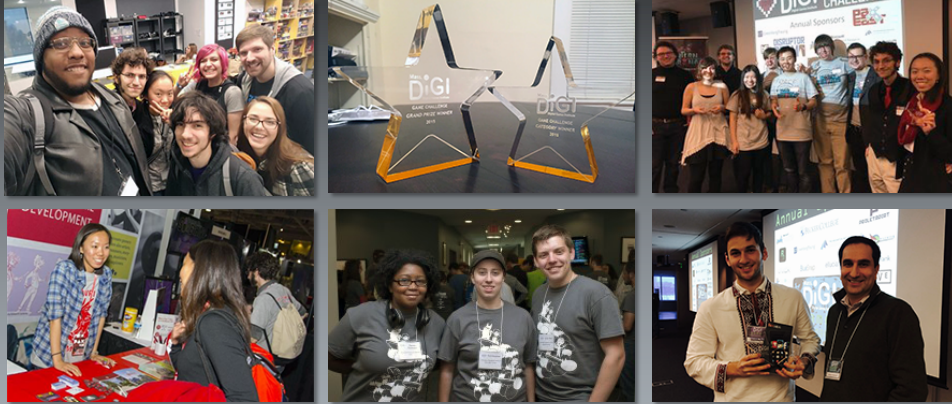
3

Agenda

Demos of student work
Faculty, Philosophy & Curriculum
Employment outlook
Alumni profiles

WPI Interactive Media and Game Development

4

Student Projects

WPI Interactive Media and Game Development

5

PENUMBRA
Games

Welcome!

6

Meet the team

Kaamil
Lokhandwala

Brittany
Henriques

Charlie
Baldwin
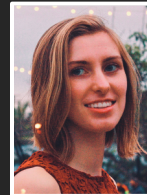
Tori
Buyck

Matt
Johannesen

Ben
Dorr

Janelle
Knight

Charlie
Kittler

7

Team projects

- Central to the WPI Plan
  - IQP and MQP

- Many course assignments are team-based too!
  - Helped us prepare for bigger projects later

- Teamwork is <u>critical</u> in the game industry
 - Especially among people from different disciplines
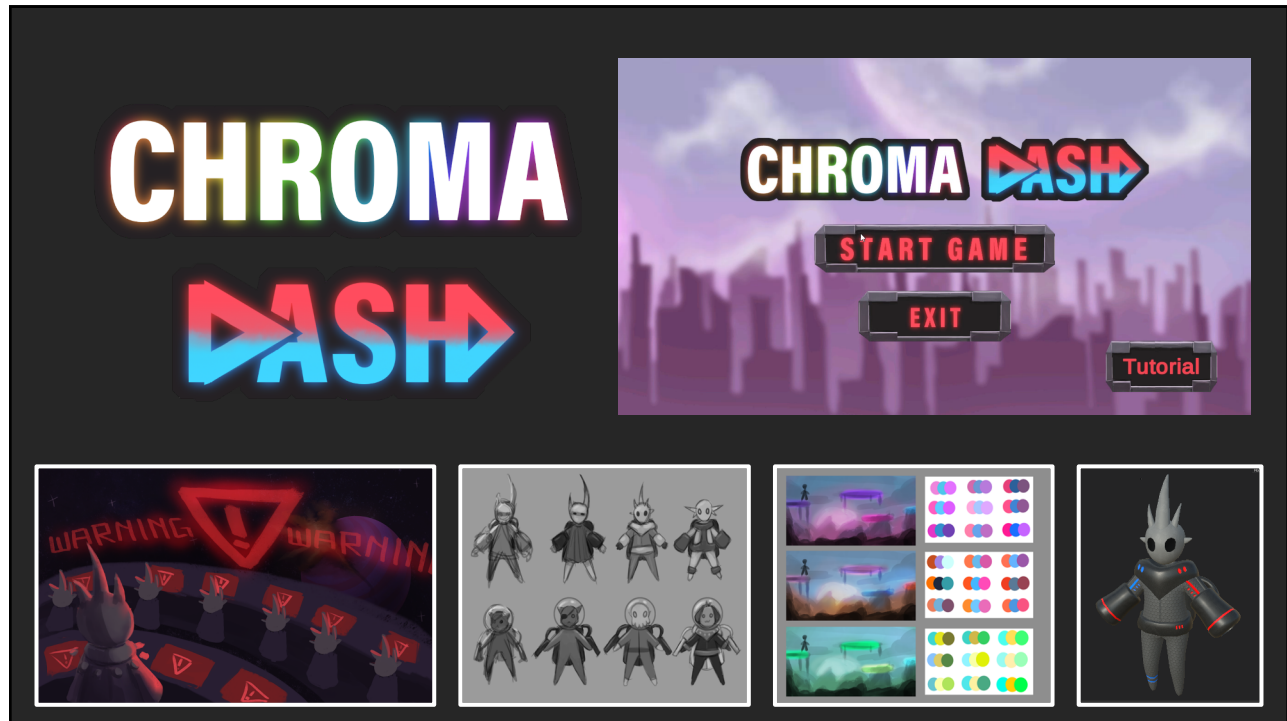
8

Extracurricular support

- **4+ game jams per year**
  - Learned to prototype and get organized quickly
  - Great time to experiment!
- **Easy access to resources**
  - Computers, VR equipment, 3D printers and more
- **Professors with strong industry experience**
  - Helping with pitches, portfolios, internships, etc.

9

Cutthroat Game Jam: *Campfire Kitchen*
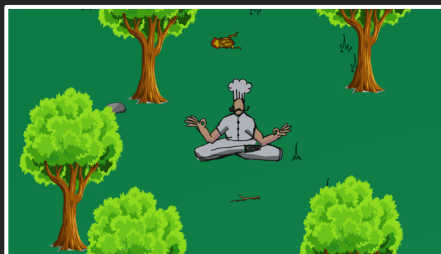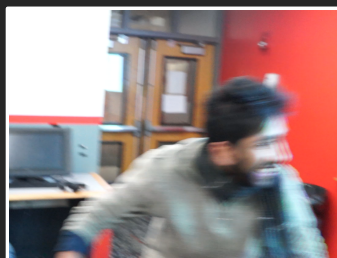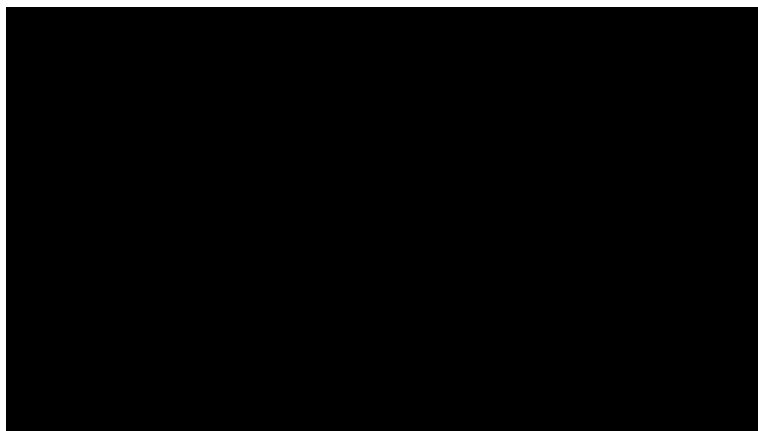

10

11

12

13

14

Who are we?

Professional unprofessionals.

15

Sliptime Sleuth

16

Clubs!

17

Thank you!

18

About IMGD

One of the world's oldest degree programs in interactive media and game development

1,300+ graduates since 2006

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19

Faculty

21 Faculty

80+ Courses

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20

Faculty Expertise

Technical Development: Engine architecture, networking, procedurally-generated content, game AI, virtual/augmented reality, data analytics/visualization

2D Art/Animation: Digital painting, graphic design, concept illustration and storyboarding, traditional and digital animation, studio techniques/practices

3D Art/Animation: Digital sculpting, polymodeling, texturing/mapping, lighting, rendering

Technical Art: Rigging, mesh optimization, motion capture, pipeline management

Design: Tabletop and digital prototyping, game engine scripting, iterative playtesting, instrumentation and metrics, documentation

Writing: Nonlinear and interactive narrative, character development, scriptwriting, alternate reality games (ARGs), escape rooms

Music/Audio: Traditional and digital music recording, synthesis, sound effects and Foley, editing, mixing, robotic and live-coding performance

Game Studies: Philosophy, ethics, history and future trends

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21

Philosophy: Hybrid Thinkers!

All IMGD students gain **hands-on, team-oriented, project-based** experience in **every aspect** of the interactive media and game development process.

Everyone takes courses in programming, design, content creation (art, animation, writing, audio), testing and management.

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22

MassDIGI College

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23

Curriculum

There are <u>two</u> IMGD majors!

IMGD Technology
(Bachelor of Science)

IMGD
(Bachelor of Arts)

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24

IMGD Technology
(Bachelor of Science)

WPI Interactive Media and Game Devel

25

Technical Game Development

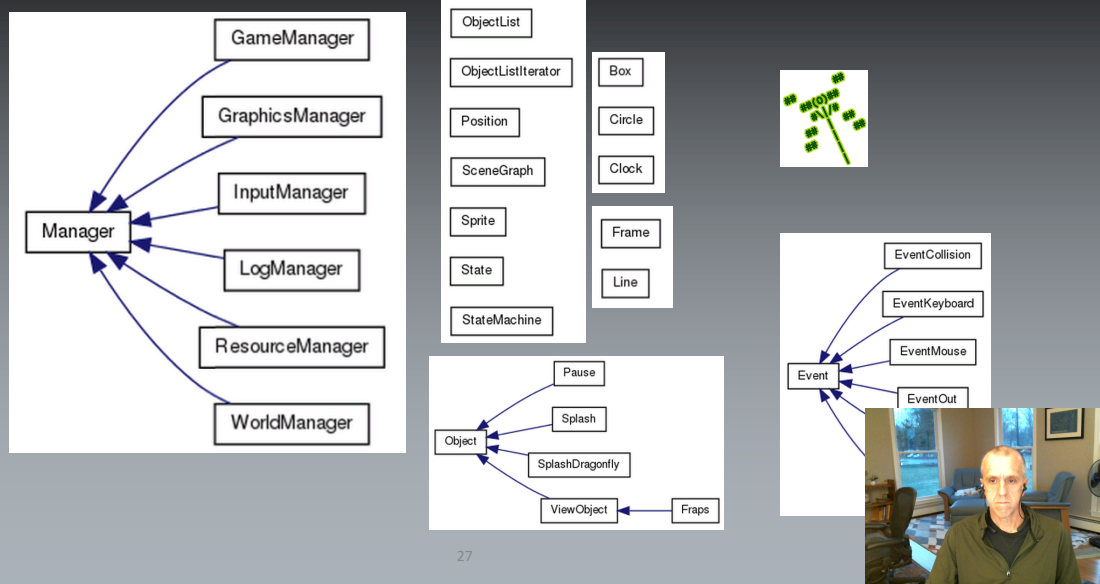IMGD 3000: Students build a text-based game engine from scratch in C++, and then use it to create a game.
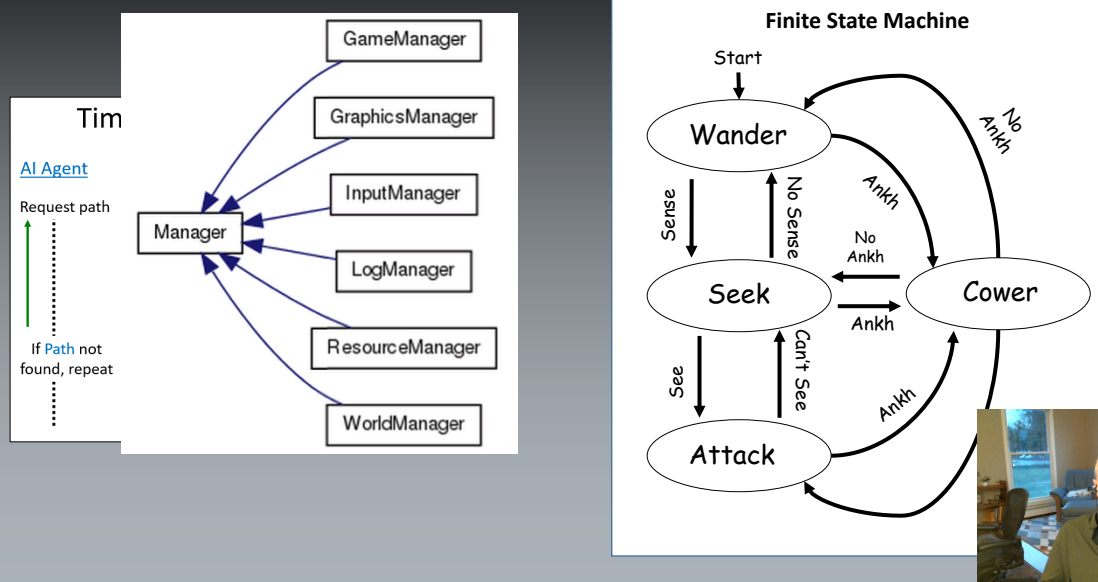
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26

Game Engine Architecture Blocks

27

Technical Game Development: AI

28

Technical Game Development: AI Navigation

Forced-based Steering

current velocity
steering
seek path
target
desired velocity

Path Smoothing

Pathfinding

Target

C

There is no obstacle obstructing the path from A to C so the two edges can be replaced with one.

With an obstacle in the way both edges are necessary

Navmesh

29

Technical Game Development: Networking

Client-Server Networking

User Input

Message: User Input

Process and Validate Input

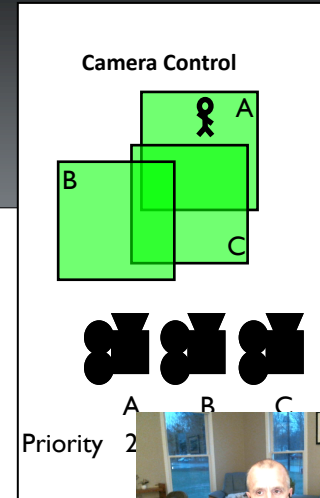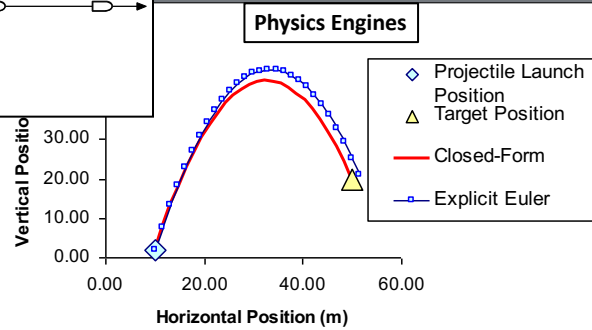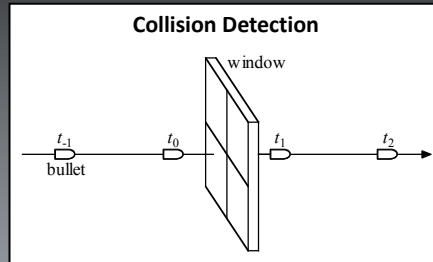Message: Ok User Input

Render Input

Time

Latency Compensation

Unit Owner
Actual Path

t0
t1
t2
t3

send initial position
send update
send update
send update

Opponent
Predicted Path

30

Technical Game Development: Physics & Cameras

Collision Detection

window

t_{-1} t_0 t_1 t_2
bullet

Physics Engines

◇ Projectile Launch Position
△ Target Position
— Closed-Form
—□— Explicit Euler

Vertical Position
30.00
20.00
10.00
0.00

0.00   20.00   40.00   60.00
Horizontal Position (m)

Camera Control

A
B
C

A   B   C

Priority   2

31

Technical Game Development: Summary

"Physics, Networking, AI…. Tip of the Iceberg!

Physics

window

t_{-1} t_0 t_1 t_2
bullet

Networking
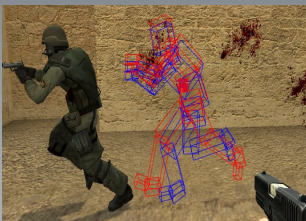
Artificial Intelligence

Start

Wander

No Ankh

Sense   No Sense

No Ankh

Seek   Can't See   Cower

See   Ankh

Attack   No Ankh   Ankh
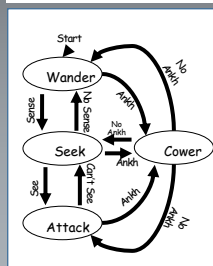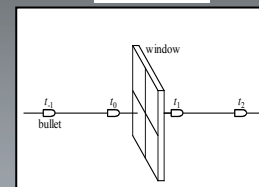
32

Computational Craft Development

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IMGD (BA) Writing Concentration

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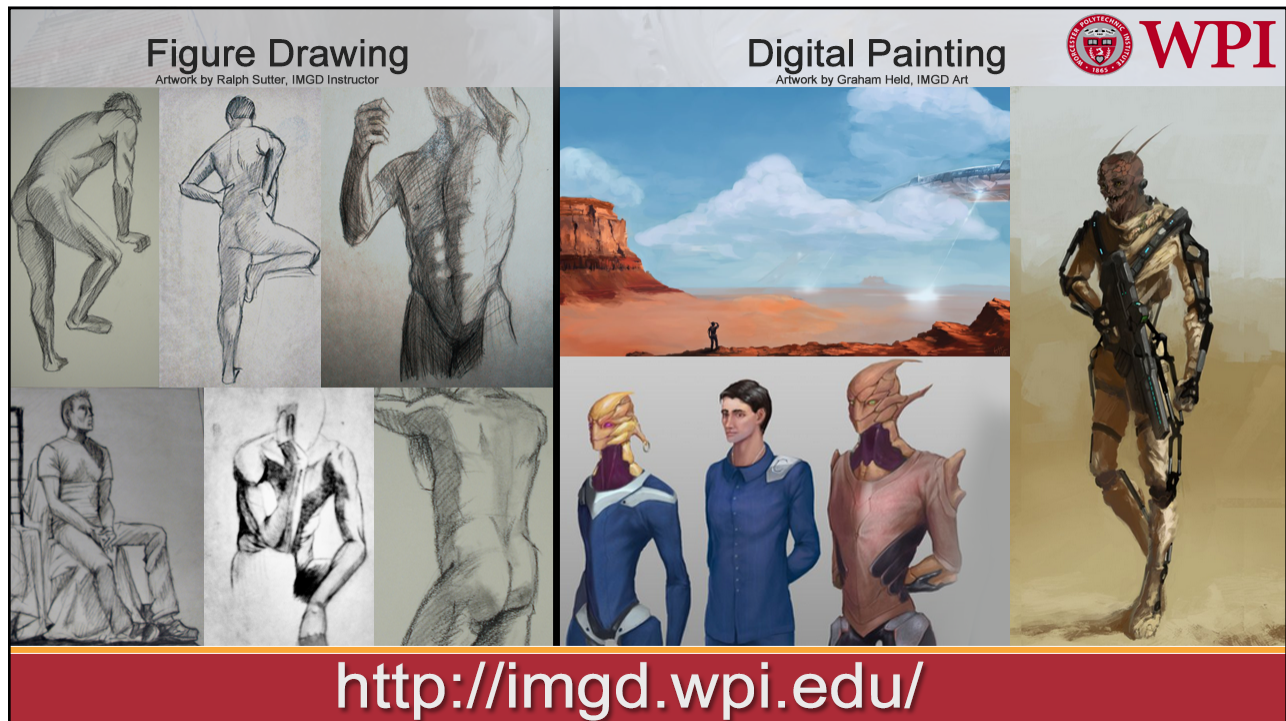
34

Dual Majors with Computer Science

Computer Science at WPI, like IMGD, is a top ranked school in the nation (#2 this year)

35

IMGD
(Bachelor of Arts)
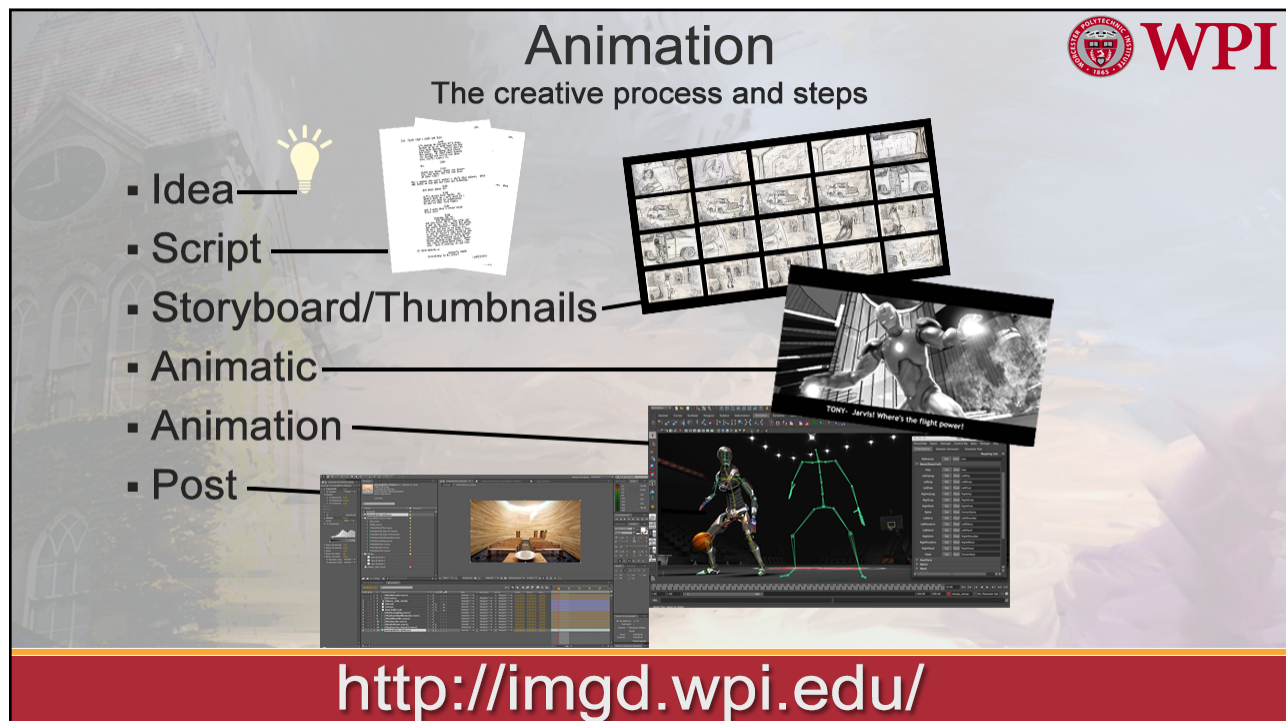
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36

IMGD Art

http://imgd.wpi.edu/

37

Figure Drawing
Artwork by Ralph Sutter, IMGD Instructor

Digital Painting
Artwork by Graham Held, IMGD Art

http://imgd.wpi.edu/

38

3D Modeling (Traditional Polymodeling)

http://imgd.wpi.edu/

39

3D Modeling (Digital Sculpting)

http://imgd.wpi.edu/

40

41

42

43
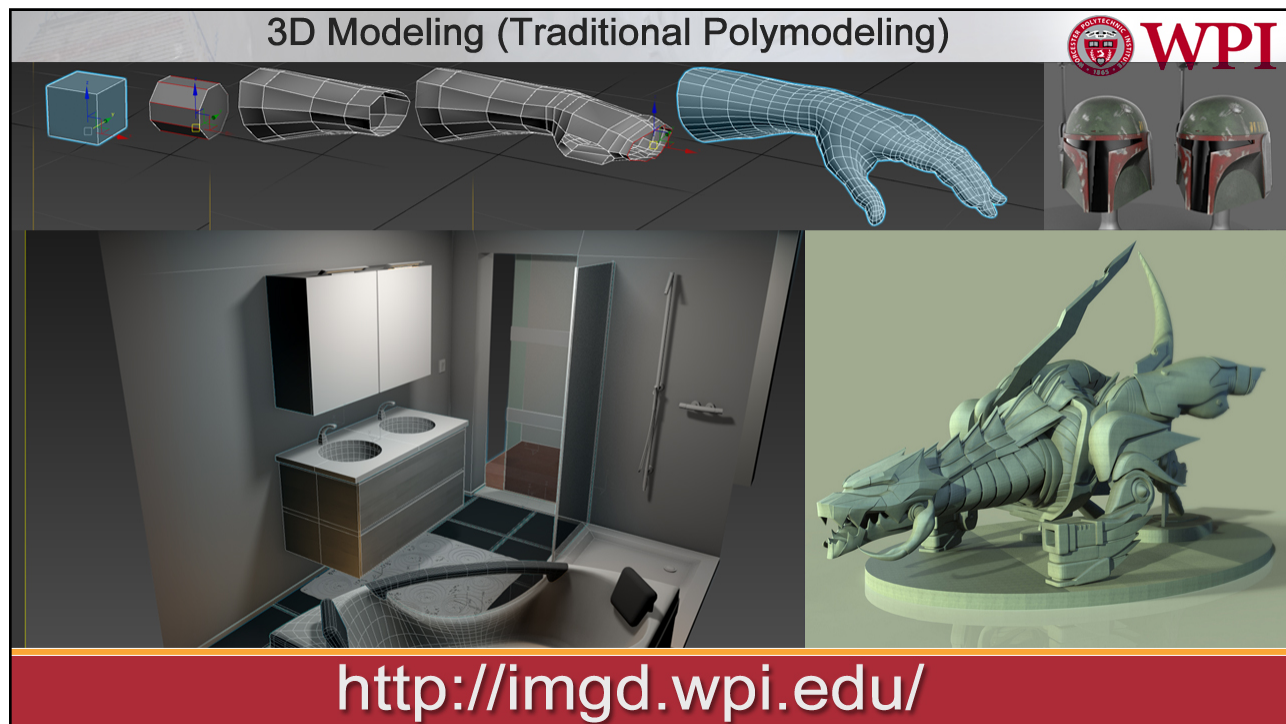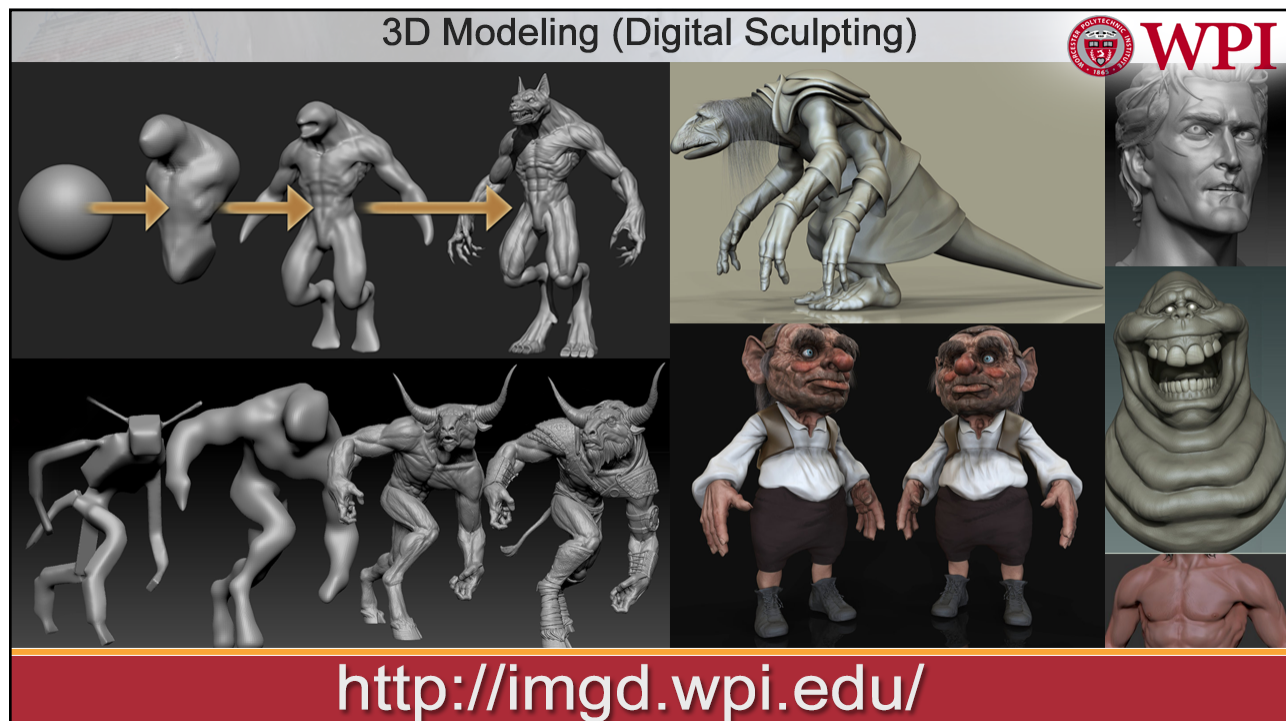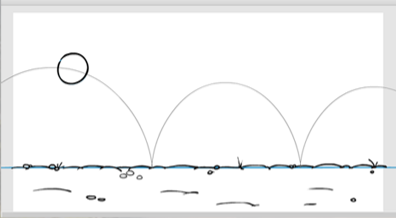
44

Student work samples

Janelle Knight

Charlie Baldwin

Davina Dawson

Karen Hou

Patrick Luck
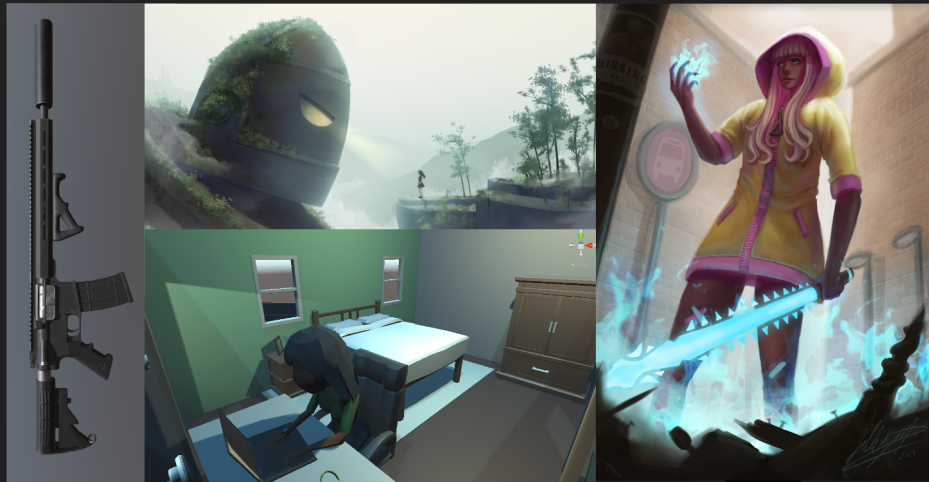
45

Concept + Model = Life : Make your creations breathe!
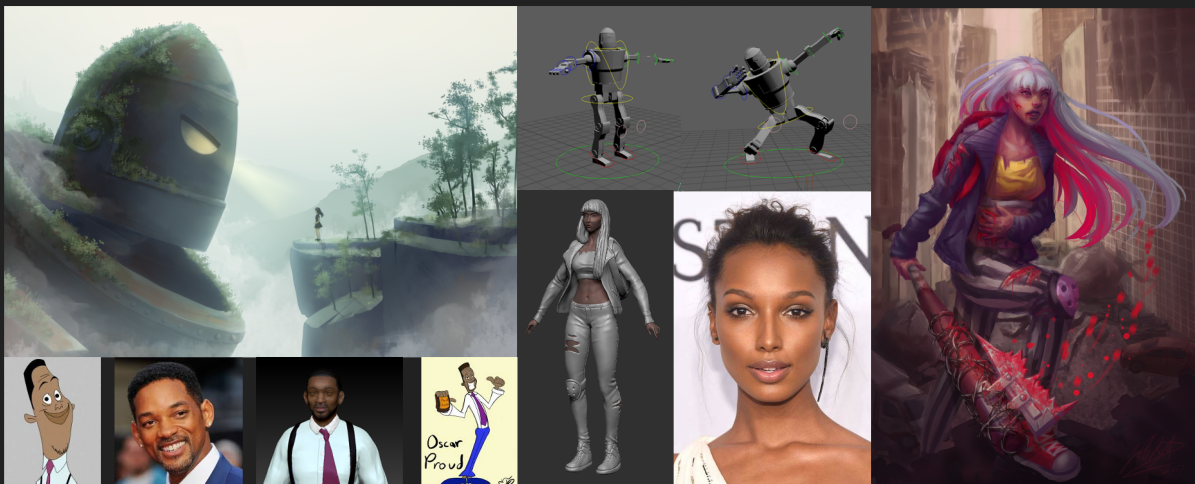
46

First-year students after one art course ...

47

Creating <u>functional art</u> for games, films, medical and more.

48

Modeling, rigging, animation … and imagination.

WPI was a good choice for this because of its seamless integration of both the arts and technology into their classes.

- Patrick Luck

49

3D Modeling in IMGD

From a current student and SA

50

From concept to completion

51

The choice is yours!

52

Nothing is out of reach!
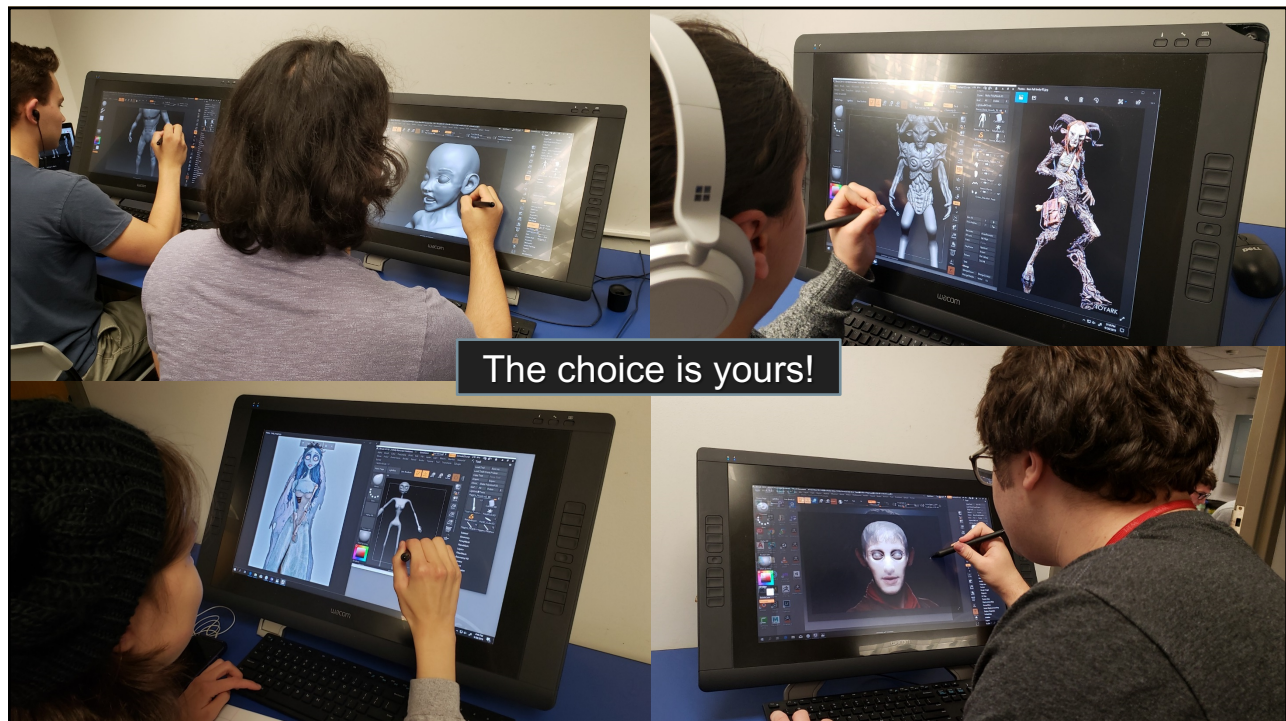
53

We create <u>technically sound</u> artists.

54

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(Bachelor of Arts)

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55

IMGD (BA) Writing Concentration

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56

IMGD (BA) Writing Concentration

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57

IMGD (BA) Music Concentration
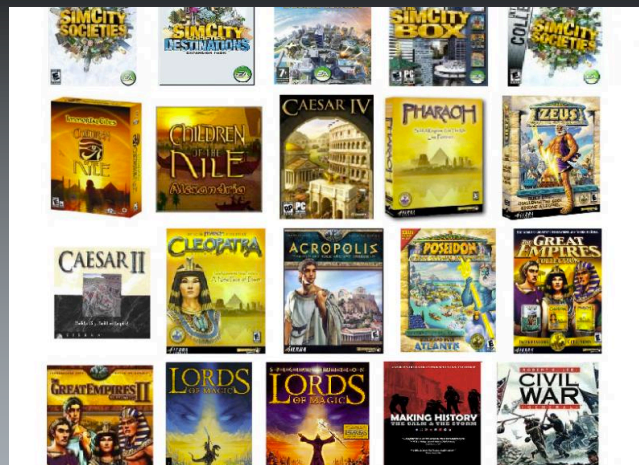
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58

59

Curriculum at a Glance

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60

IMGD Program
Essential Courses Flowchart

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61

Fundamental courses
Both IMGD majors

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62

Advanced courses
IMGD Technology (BS)

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63

Advanced courses
IMGD Visual Art/Tech Art (BA)

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64

Advanced courses
IMGD Design/Writing (BA)

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65

Curriculum

Other IMGD opportunities

- Worcester Center for Crafts
- IMGD Lecture/Celebrity Series
- Master classes with industry professionals
- IMGD Minor available (+6 courses)
- IMGD MS program with 5-year BS/MS option
- Worcester developer community
- PAX East, Boston Metro game dev community

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66

IMGD Student Clubs

- IGDA: Make games!
- GDC: Play games
- eSports: Play Games, but different
- Diversity in Games: Where inclusivity reigns supreme

67

IMGD Labs
- VR
- AR
- Green Screen
- 3D Scanning
- 3D Printing
- Audio Recording Room
- Wacom Screen
- Giant Screen in Foise
- MORE!

68

34

Games are International
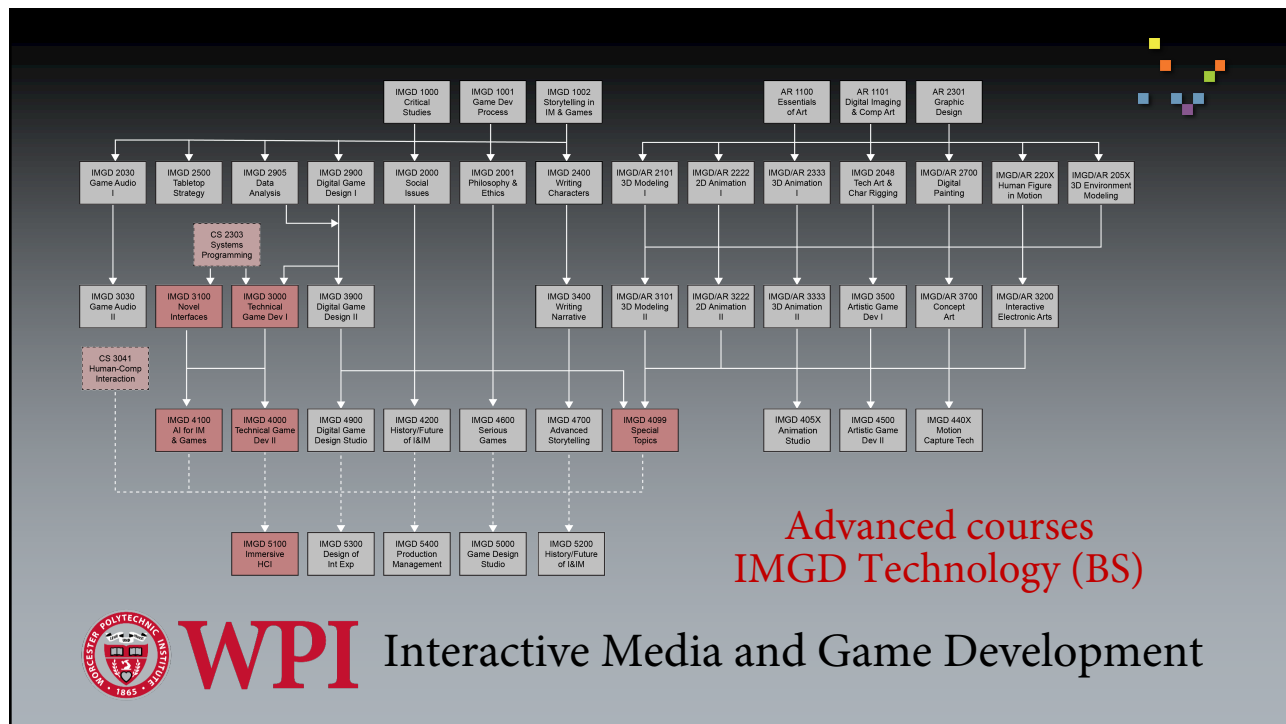
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69

PICTORIAL MAP OF JAPAN

International Opportunities
- Japan
- Sweden (co-convened)
- Australia
- New Zealand

70

University of Skövde, Sweden

71

Employment outlook

2017-18 Entertainment Game Industry
Entry-level salaries (0-3 years experience)
- Engineer/Programmer: $72,000
- Artist/Animator: $55,000
- Designer: $55,000
Varies by skillset and location

Source: http://www.gameindustrycareerguide.com

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72

Professional Support

- Career Development Center: only school to be top ranked for:
  - Best career services
  - Best career placement
  - Best school internships
- One of the best retention rates in the country (95%)
- MassDigi, Showcasing, Alumni network, etc.

73

Alumni employment

Tracking ~60% of IMGD alumni (2016)

- 45% entertainment game industry
  - Riot, Hasbro, Activision/Blizzard, Harmonix, Boss Key, Starbreeze
- 25% technology/engineering
  - Raytheon, AMD, MIT Lincoln Lab, Mitre, Nuance
- 5% interactive media/web development
  - Push Group, Bose, Applied Interactive, Creat Studios
- 5% graduate school
  - WPI, SMU Guildhall, USC Gamepipe
- 20% other

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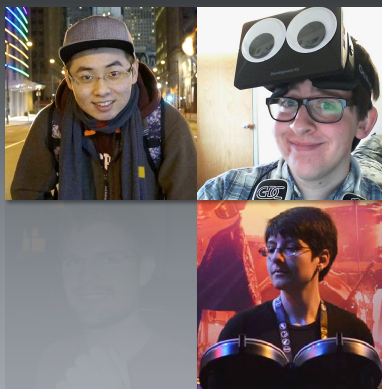
74

Alumni employment

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75

Alumni employment

Kedong Ma '16
Sean Halloran '16

HARMONIX

Mary Yovina '11

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76

Alumni employment

Robert McKenna '15

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77

Alumni employment

Dan "Driggsy" Driggs '16
https://beam.pro/driggsy

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78

39

Alumni employment

Max Perlman '16

MIT
Lincoln
Laboratory
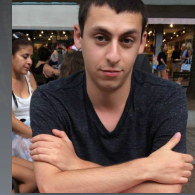
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79

Alumni employment

Evan Polekoff '16

BLIZZARD
ENTERTAINMENT
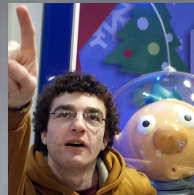
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80

Alumni employment

Michel Sabbagh '17

Bethesda
SOFTWORKS
a ZeniMax Media company

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81

Alumni employment

Adam Pastorello '11
Riley Brown '11

RISEN GAMES
STARDRIFT NOMADS
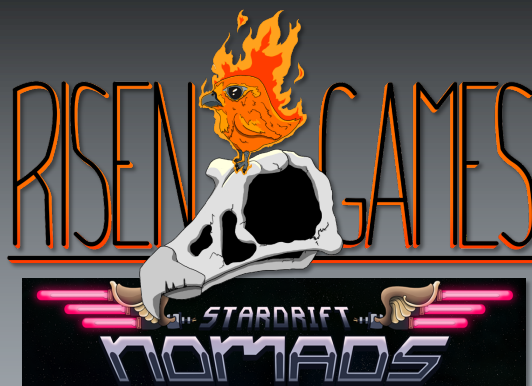
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82

Alumni employment

Alex Schwartz '09, CEO

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83

Alumni Game Credits (Sample)

1 2 3 Kick It!
Aaaaaculus!
AC/DC: Rock Band
Aliens: Colonial Marines
Bad Apples: Battle Harvest
Ball Buster Blast
Beatpop
Bioshock: Infinite
Call of Duty: World at War
CastleVille Legends
Catlateral Damage
Chroma
Cosmic Adventures
Dance Central
DDO: Menace of the Underdark

Dream Zoo
Drunken Robot Pornography
Dungeons & Dragons Online
D&D: Shadowfall Conspiracy
Dyscourse
Elegy for a Dead World
Elemites
Fantasia: Music Evolved
FarmVille 2: Country Escape
Fieldrunners 1 & 2
Go Home Donosaurs!
Grail to the Thief
Green Day: Rock Band
Heroes of Dragon Age
Infinite Crisis

Jack Lumber
Lego Rock Band
Lord of the Rings Online
LoTR: Helm's Deep
LoTR: Riders of Rohan
Marvel PuzzleQuest: Dark Reign
Mathbreakers 3D World
NBA Math Hoops
Nigeria Small-Scale Exports
Nightshade Academy
Pandora: Purge of Pride
Pinballistik
Power Gig
PowerGig: Rise of the Six String
Quake Area Arcade

Ricochet HD
Rock Band 2 & 3
Rock Band: Country Pack 1 & 2
Rock Band: Metal Track
Rock Band: Music Store
Second Life
Shoot Many Robots
Smuggle/Snuggle Truck
Stem Stumper
The Beatles: Rock Band
Tinkerbox
Updraft Jack
US Heathcare Simulation
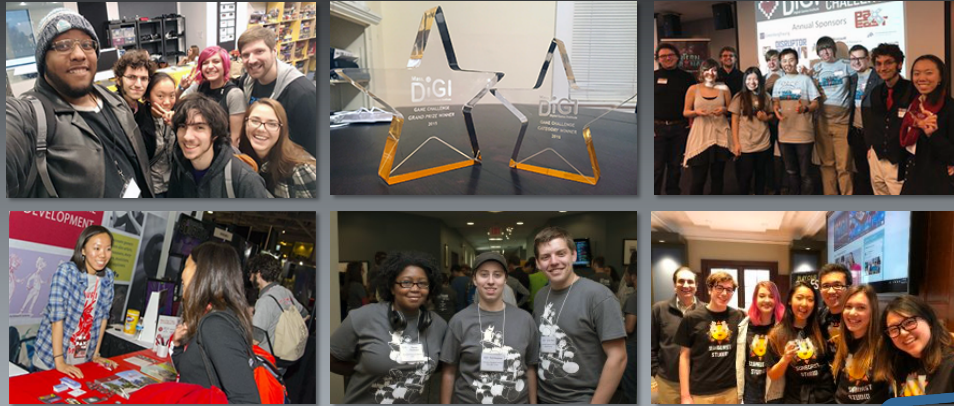Wolfenstein
Yoshi's Epic Yarn

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84

Thank you for coming!

85

Thank you for coming!

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86