Parth Patel

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EDUCATION

Concordia University, Montreal, QC, Canada. Master of Applied Computer Science **(3.46/4 GPA)** **Dec 2020**

Gujarat Technological University, Gujarat, India Bachelor of Engineering in Computer Engineering **Apr 2018**

Key-courses

Game Programming(Unreal, Unity 3D), Digital Video Processing (Python), Advanced Java(Java), Image Processing(python),Computer Networks(Java), AI (Python), Algorithms(C/C++), Distributed System Design(Java). Web Development (HTML, CSS, PHP, JavaScript).

TECHNICAL SKILLS

- ***Languages**: C#*, Java, Python, C++, C, PHP, HTML, JavaScript.
- ***Game Engine:*** Unreal Engine, Unity.
- ***IDE /GUI Tools and libraries**:* Eclipse, IntelliJ, OpenCV, NetBeans, Code Blocks.

ACADEMIC PROJECTS

cURL Command line implementation **Dec 2020**

- The goal of this project was to implement network protocol from its technical specifications. The project was developed in **Java**.
- A simple **HTTP client library** was developed and was programmed to run like **cURL** command line application with **TCP/UDP** by not using any in-built library of java.
- On top of this also developed a simple **HTTP file server** which can handle multiple HTTP client requests for **GET** and **POST** and uses **Selective Repeat ARQ** protocol for sending and receiving packets, which was developed from scratch without using in built functionsor library.

RISK: Global Domination **Dec 2019**

- A multiplayer, turn-based game of RISK board game using **Java**. It was a 6-member team project.
- It's a **command line** version of the popular RISK game and can be played by 6 players. It supports **tournament mode** and **auto-play mode**.
- The game can be played with **AI-bots** and bots can be selected to be aggressive, cheater, defensive, benevolent, or random.
- Player can create their **own map** or load a pre-existing ones prior to game begin. It also included **card system** and **troop system**.

Digital-Video Processing Software **Dec 2019**

- This project was developed in **Python** and **PyQt.**
- The software takes two videos as input and outputs the merged video with selected video **transitions**.
- The transitions can be **fade, cut, wipe, scale** and **picture-in-picture**.

Roll-a-ball (Microsoft Kinect). **Mar 2019**

- It's a 3D game developed in **Unity C#** using **Microsoft Kinect** API.
- In this game a player controls a ball which can be used to pick up points on map. It was a single player, offline game.
- The game was initially designed to play with keyboard. Then I took it one step further. I used the Kinect API with Unity to control the ball using **body movements**.
- Specific hand-body movements will the trigger the ball to move in specific direction.

Seam-Carving. **Mar 2019**

- This project was developed in **C++** using dynamic programming and **OpenCV.**
- The algorithm used horizontal and vertical seams iteratively to **reduce the size** of the image.
- The main idea of the project was to find seams that cut through **non-salient** features of image.

Image-Segmentation. **Mar 2019**

- This project was developed in **C++** using min-cut and **OpenCV.**
- The main idea of the project was to implement a binary image segmentation.

Distributed Course Registration System (DCRS). **Dec 2018**

- The system is built in **CORBA using Java IDL.** It consisted of 3 replicas of server, a sequencer and front end.
- The front end was used by clients to access the system and **sequencer** was used to generate unique ID.
- Each request was sent to all replicas and ensured that each server reply match with others and if not, then server updates itself after requesting correct data from other servers.
- The 3 replicas ensured **high availability** and worked in circumstances of **system failure or fault tolerance** in any of the server.
- In this project I was able to understand and develop a distributed system with high availability, scalability and fault tolerance.

Image Stitching(Panorama) **Dec 2018**

- Implemented **Harris matrix** and **SIFT algorithm** for stitching 6 images to produce Panorama image using **Python** and **OpenCV.**
- Used Harris matrix to detect corners, find matches using **descriptors**. Then computed the **homography** of images and run **RANSAC.**
- Finding the **inliers** and stitching the images accordingly.

Game development. **Mar 2018**

- A **survivor game** based in a limited area of play area where you must kill zombies and a cycle of day and night.
- The game consists of health system and pick up items which like **health pick up** and bombs
- The zombies attack at melee range which gives player the chance to shoot with the pickup guns.
- In 2-person team, we used **Unreal Engine** and **C++** for developing this complex game of single player. This project secured us **A+ grade** in our final year of bachelor's degree.
- The purpose of this project is to develop **3D, first person**, survival game with **AI bots**.

Tanks multiplayer. **Dec 2017**

- An offline multiplayer built in Unity **C#** where a player controls a tank in the game which shoots the other player with shells.
- It was 2 player game with a tank consisting of **health system** and shooting.
- The bullet where a 3D shell this game had an arena for gameplay consist of environmental objects like trees and rocks.
- A Game which won **1st prize** in College event "Aavishkar(invention)" where student presents their new ideas and project.
- This Unity 3D game was steppingstone in my Game Development career and a good team building experience.

AWARDS

- Aavishkar 2017(Innovative Ideas)
    - Represented my project "Tanks Multiplayer" it was first and only Game project in the event. It was awarded as and innovative idea of the year across the college.