# Introduction and Background

Space Shooter 2D is a simple game implemented using the IDE Android Studio and the programming language Java. Nowadays the popularity of games in the google play store is undeniable as the top paid applications consist mainly of games (Google LLC, 2018). Thus, this coursework aims to create a video game for android from scratch. The idea is to build a simple two-dimensional game like space invader with a simple menu to navigate through the different screens.

Additionally, another important aspect this coursework aims to cover is to make use of android specific features and learn more about the native development process. Key features as Bluetooth controller handling and the use of accelerometer can be adopted for any other application as well. The simple game development framework created at the end of this work needs be altered and can then be reused as well. As Cho (2014, pp. 96-107) states, reusability is an important matter in software development, but it was neglected for this game framework to make the work feasible.

Android is provided on many different devices and hence many different screen resolutions need to be covered (Steele & To, 2010). If not handled, this issue will lead to different gameplay experiences on different devices. Horton (2015, pp. 89-97) explains that this issue can be solved by drawing the game objects at the same coordinates and scale appropriately regardless to the resolution. This solution would have gone beyond the scope of a simple game framework and was therefor omitted.

The key features of the application are:

* Graphics: Using bitmaps the graphics are drawn on the screen and animated.
* Audio: To produce sound effects and the looping background music.
* Persistence:
  + Shared preferences: Save the Boolean values for options like enabling sound or accelerometer.
  + Database: Connection to and population of a database is included for the high-scores.
* Sensor Input: The accelerometer can be enabled in the options for gameplay. Additionally, vibration is used to represent being hit by an enemy ship.
* Wireless Connectivity: Any gamepad, joystick or D-Pad can be used to play the game.
* Handling audio and video: In the options menu a tutorial button is available which opens a video player that shows the tutorial for the game.
* Simple game engine: A game engine with reusable classes for handling the game loop.

# Design:

# Demo Sheet:

Mobile Interactive Systems Demo Sheet

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App Title: SpaceShooter2D

App Description:

The application is a simple two-dimensional space shooting game. The user can play the game indefinitely and create high-scores which will be saved in the shared preferences.

Gameplay: Use your fingers and touch the upper or lower part of the screen’s left half to move the ship. Shoot by pressing anywhere on the right half of the screen. Destroy as many enemy ships as possible and survive long enough to beat the high-score. Initially, the player starts off with two lives and after getting hit the first time has a two second time frame in which the ship is immune to hits.

Key Features:

* Graphics
* Audio
* Simple game engine incl. physics

Other Features

* Persistence: Database and shared preferences
* Sensor Input: Vibration and Accelerometer
* Wireless Connectivity: Any gamepad, joystick or D-Pad via Bluetooth
* Handling audio and video

What have you done which addresses the following:

* Design: After prototyping how the individual menus should look like they were created having simplicity in mind. Many users become confused if there are too many options to choose from.
* User testing: I asked friends and neighbours to test the application. The game was tested on three different devices with success and no issues.
* Adapting to different devices: The layouts have got a “weight” attribute to determine how much of the screen space they will cover. Through this method the layout looks approximately the same on different resolutions.

Did you use any external resources such as code, multimedia, text…etc?

Yes, all multimedia used in the project are from the public domain.

List of external multimedia:

* The ships and laser sprites along with the sound effects were from the following website: <https://kenney.nl/assets/space-shooter-redux>
* All title images were created using the “spaced out” theme from the following website: <https://de.cooltext.com/Logo-Design-Spaced-Out>
* Background images were found on: <https://pixabay.com/de/>
* The application icon was created using the application “Iconion”
* Ambient music by frankum: <https://freesound.org/people/frankum/>
* Font: <https://www.1001freefonts.com/>

Is your application creative? Why and how?

Most of the games created nowadays, make use of available game engines. This application provides everything from scratch and only accesses the android utilities. Furthermore, providing support for Bluetooth game controllers improved the playability and usability of the application. Although the main concept is not new, some game features are creative e.g. the rapid fire of lasers when many ships are close to the player ship.