The Secret of Magic
VR Game
A VR game that is inspired by: Harry Potter and the Philosopher’s Stone (2001)

Project goal: Connect VR Game with deep learning mechanism

Player’s goal: Defeat all enemy waves using spells which are triggered by player’s drawn glyphs
Running platform: PC
Equipment required:
- HTC Vive headset
- HTC Vive controller
Developed using Unity
Game Overview

- One scene - 360° arena
- Player should draw one of the predefined glyphs (below)
- Each glyph triggers a different spell
Game Overview (Cont.)

- Undead enemies die on hit
- Player get points for every killed enemy
- Difficulty is raised as the game progress (movement, #enemies, directions)
- The game is over when an undead reaches the player
- Starting on wave 4 the game change to dark environment
Dark environment
Initially we wanted to use transfer learning.
Using a trained model gave medium results (70% accuracy).
After research, we chose to build a Convolutional Neural Network.
End result: 90.196% accuracy.
Convolutional Neural Network Overview

Architecture:
- Two convolution layers
- 4 FC layers.
- ReLU & MaxPool activation

Input dimension (image) 3x32x32
Output dimension (prediction) 1x8
Number of parameters in the network: 38,523,912
Classifier Training

- Model was trained from in-game drawn glyphs
- 307 drawings database
- Database was split into train and test sets
- The train set was expanded by augmenting the images (scaling and rotating)
test accuracy: 90.196%
Effects Manager

- Using Realistic Effects Pack v4 asset
- Instantiate spells
- Spell lifetime timer
Gestures Manager

- Collects the player drawn data
- Creates an image by transferring world point to screen point
- Encodes it to JPG
- Starts a python process on another thread
Each undead enemy killed worth 50 points

Player high score is saved between games
Click here!
Supervised by Yaron Honen and Boaz Sternfeld
Oran Shuster for consulting and designing the logo
Developed by Amit Shuster & Michal Guttmann

Special thanks to all the people who played and commented
THANKS!

Any questions?