

THESIS IDEA

INTERDISCIPLINARYTY

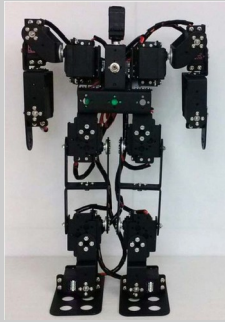
- 1) ROBOTICS (HW + SW)
- 2) GAMIFICATION ESL (SW+HW)

THESIS IDEA

1.1) ROBOTICS HW: DESIGN

A COMBINATION OF:

BIPED ROBOT



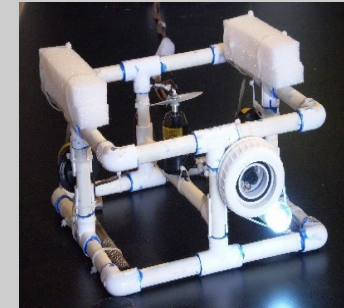
OCTOCOPTER
DRONE



TANK



UNDERWATER
ROV



THESIS IDEA

1.2) ROBOTICS HW: MAIN PARTS (A)

A.1) POWER SOURCE

- LIPPO BATTERIES (POWER MOTORS)
- 9V BATTERIES (ARDUINO)
- 18650 BATTERIES (SERVOS)
- SOLAR PANELS (9V & 12V)
- ESC 30A
- PCA 9685 PWM CONTROLLERS

THESIS IDEA

1.2) ROBOTICS HW: MAIN PARTS (A)

A.2) TELECOM

- LTE MODULE
- MINIPCIE MODULE
- SIM CARD
- RASPBERRY PI

THESIS IDEA

1.2) ROBOTICS HW: MAIN PARTS (A)

A.3) DRIVE

- BRUSHLESS MOTORS 2700KV
- DEGREE CONTINUOUS ROTATION SERVOS
FOR TRANSFORMATION MOVEMENTS
- MINI SERVOS FOR FINE MOVEMENT

THESIS IDEA

1.2) ROBOTICS HW: MAIN PARTS (A)

A.4) CONTROL

- ARDUINO FOR DRIVE
- RASPBERRY PI FOR TELECOM

THESIS IDEA

1.3) ROBOTICS HW: INTERACTION

- 2 X CAMERAS + TPU (VISION)
- 1 X CAPACITOR MICROPHONE (SPEECH REC)

THESIS IDEA

1.4) ROBOTICS HW: CONTROL

- ARDUINO UNO FOR DRIVE
- RASPBERRY PI FOR TELECOM (POSSIBLE UPGRADE TO BANANA PI R2?)
- 1 X LATTEPANDA Z8350 (WINDOWS + PROGRAMS) (POSSIBLE UPGRADE TO UDOO BOLT V8?) FOR VIDEOGAMES AND OTHERS
- NETWORK CABLE

THESIS IDEA

1.5) ROBOTICS HW: CHASSIS

- PLA FOR 3D PRINTED FIX PARTS
- TPU FOR 3D PRINTED FLEXIBLE PARTS
- METHACRYLATE FOR LASER CUT PARTS
- METAL FOR OTHER PARTS
- PRIMERS TO ISOLATE PARTS FROM ENVIRONMENTAL ISSUES

THESIS IDEA

1.6) ROBOTICS SW: CONTROL

- ROBOTIC OPERATING SYSTEM (ROS)
- C CODE FOR ARDUINO
- BETAFLIGHT

THESIS IDEA

1.6) ROBOTICS SW: DESIGN

- (CAD) OPENSCAD, FREECAD, LIBRECAD
- (ARDUINO) ARDUINO IDE
- 3D SCAN (HORUS)
- 3D PRINT (CURA)

THESIS IDEA

2.1) GAMIFICATION SW: PROGRAMMING LANGUAGES

- 1) JAVA FOR VIDEOGAMES
- 2) SQL TO OBTAIN SCORES AND DATA
- 3) PYTHON FOR RASPBERRY PI
- 4) OPENCV FOR VISION

THESIS IDEA

2.2) GAMIFICATION SW: DESIGN

A) GRAPHIC DESIGN

A.1) (2D) INKSCAPE, KRITA, PENCIL2D

A.2) (3D) BLENDER, MAKEHUMAN

B) AUDIO EDITION

B.1) MUSESCORE

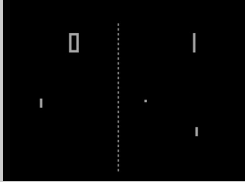

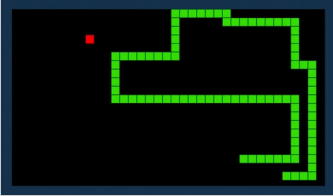

B.2) AUDACITY

C) VIDEO EDITION

C.1) AVIDEMUX

THESIS IDEA

2.3) GAMIFICATION SW: EVALUATION

| SPEAKING PONG ARCADE MOD | LISTENING SPACE INVADERS ARCADE MOD | READING SNAKE ARCADE MOD | WRITING SOKOBAN ARCADE MOD |
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