**< Radio-controlled data collecting plane/RCDCP>**

**Requirements analysis and idea formulation**

**Digital Media and Design course**

**Version 0.0.1**

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| **Date** | **Version** | **Description** | **Author** |
| 29.10.2024 | 0.0.1 | Theoretical calculation, parts buying, getting requested environment, searching for the software | Aleksander Sem.  Aleksander Ser.  Alex  Misha |

# Problem research and analysis

Research and record ideas, observations and insights relevant to intentions, reflecting critically on work and progress. Minimum 500 words.....

The idea is to create an RC plane that can record and send telemetric data, including air pressure and wind speed, to a computer.

Research shows plenty of ways to create RC controls and data transmission in real time, depending on your financial situation. We’ve stuck to the ESP-32 WIFI transmission system. It’s the best in our situation due to the cheapness and flexibility of this technology. The cheapness is reached thanks to not so big cover area and few channel system. The flexibility is achieved due to compatibility with Arduino architecture. Due to this compatibility, all the other electronics are Arduino-compatible. We are using Micro Servos to control movable surfaces. We are using two three-bladed propellers on each side. Ideally, the plane should weigh not more than 2 kg. For that purpose, we are using highly efficient brushless motors. For mobility and repairability sake, our plane will consist of several parts, to be exact, two separatable wings, a body and a nose cone. Also, for safety, we are planning on adding an emergency parachute, it’ll be shot once the plane loses connection or if the accelerometer detects the too-dangerous angle of the plane relative to the ground. The computer is connected using the transmitter with a connected antenna; the coverage distance is approximately 300 meters.

The software is designed to show all collected data on a screen, as well as give live-time video from a camera connected to the plane, as well as give a user the ability to control the aircraft. Some of the assembly process will happen at our homes, but most of it will happen in the RTU scientific laboratory. The lab can provide us with most of the equipment, such as a 3D printer soldering-iron devices, Arduino development boards and for a short period of time in the beginning, power supplies for tests.

# References

1. r/esp32 Sufficient-Market940 3 months ago https://www.reddit.com/r/esp32/comments/1es32ut/doing\_a\_rc\_car\_from\_scratch/
2. Brian Lough’s YouTube video 6 years ago

https://www.youtube.com/watch?v=0zs-A\_fC3Yg&t=14s

1. 3JWings’s YouTube video 6 months ago

https://www.youtube.com/watch?v=dOqChqk8AAA