

TaskVue

Productivity starts with (digital) wellbeing

Jimmy Neitzert^{1†}, Kaan Erbay^{1†}, Albert Makdissi^{1†},
Yakup Topac^{1†}

^{1*}Institut Informatik, Hochschule Ruhr West, Lützowstraße 5, Bottrop,
46236, North Rhine-Westphalia, Germany.

Contributing authors: jimmy.neitzert@stud.hs-ruhrwest.de;
kaan.erbay@stud.hs-ruhrwest.de; albert.makdissi@stud.hs-ruhrwest.de;
yakup.topac@stud.hs-ruhrwest.de;

[†]These authors contributed equally to this work.

Abstract

The project aims to develop an Electron app with a React frontend and a Django backend. The backend will use YOLO V7 deep learning to analyze features such as posture, tiredness, and distraction caused by mobile phones. The app will help users maintain their digital wellbeing and productivity by providing them with a comprehensive view of their digital activities and insights into their digital habits. The app will be designed to be user-friendly and easy to use. It will be available as a web application and will be compatible with all major web browsers. The app will also be customizable, allowing users to tailor it to their specific needs. The project will involve the development of a web application using modern web technologies such as React, Node.js, and Django. Additionally, it will require expertise in deep learning and computer vision to implement the YOLO V7 model.

In conclusion, the TaskVue tool aims to help users maintain their digital wellbeing and productivity by providing them with a comprehensive view of their digital activities and insights into their digital habits. The tool will be user-friendly, customizable, and scalable, making it an ideal solution for individuals looking to improve their productivity.

Keywords: Digital Wellbeing, Productivity, Deep Learning, Computer Vision

1 Introduction

In today's fast-paced world, productivity is a key factor that drives success. However, the traditional approach of working long hours and pushing oneself to the limit can lead to burnout and decreased productivity. In this paper, we present TaskVue, a novel approach to productivity that focuses on digital wellbeing. TaskVue is a web application that uses React and Electron for the frontend and Django for the backend. It analyzes images provided by the webcam to determine tiredness and distractions by mobile phones using a deep learning framework called You Only Look Once (YOLO). Additionally, it analyzes productivity by analyzing keystroke and mouse data. The goal of TaskVue is to help users achieve their maximum potential while maintaining their physical and mental health. By providing real-time feedback on their wellbeing, TaskVue empowers users to make informed decisions about their work habits and improve their productivity in a sustainable way. We believe that TaskVue represents a significant step forward in the field of digital wellbeing and productivity. We hope that our work will inspire further research in this area and help individuals achieve their goals while maintaining their health and wellbeing.

2 State of the Art

In this section, we provide background information on the key technologies used in our study: Electron, React, Django, and You Only Look Once (YOLO).

2.1 Electron

Electron is a framework that allows developers to build cross-platform desktop applications using web technologies such as HTML, CSS, and JavaScript. It provides a native-like experience to users and allows developers to leverage the power of web technologies to build desktop applications.

2.2 React

React is a JavaScript library for building user interfaces. It allows developers to create reusable UI components and manage the state of their application in a declarative way. React is widely used in web development and has gained popularity due to its simplicity and performance.

2.3 Django

Django is a high-level Python web framework that enables rapid development of secure and maintainable websites. It follows the Model-View-Controller (MVC) architectural pattern and provides a robust set of tools for building web applications.

2.4 You Only Look Once (YOLO)

YOLO is a deep learning framework for object detection. It uses convolutional neural networks to detect objects in images and has been shown to achieve state-of-the-art performance on several object detection benchmarks.

We believe that these technologies are well-suited for our study and provide an effective means of achieving our research goals.

3 Method

In order to evaluate the feasibility and innovation of the features in TaskVue, we used a How-Wow-Now Matrix. This matrix is a tool for selecting ideas based on two concrete parameters: originality and feasibility [1][2]. The matrix categorizes ideas based on their originality and the ease of implementation. Instead of “lowest common denominator” ideas, “wow” ideas come into focus [2]. We used this matrix to evaluate the features of TaskVue and determine which ones would be most effective in achieving our goals. By using this tool, we were able to identify the most innovative and feasible features and prioritize them for implementation. We believe that the How-Wow-Now Matrix is an effective tool for evaluating ideas and selecting the best ones for implementation. It provides a structured approach to idea evaluation and helps teams make informed decisions about which ideas to pursue.

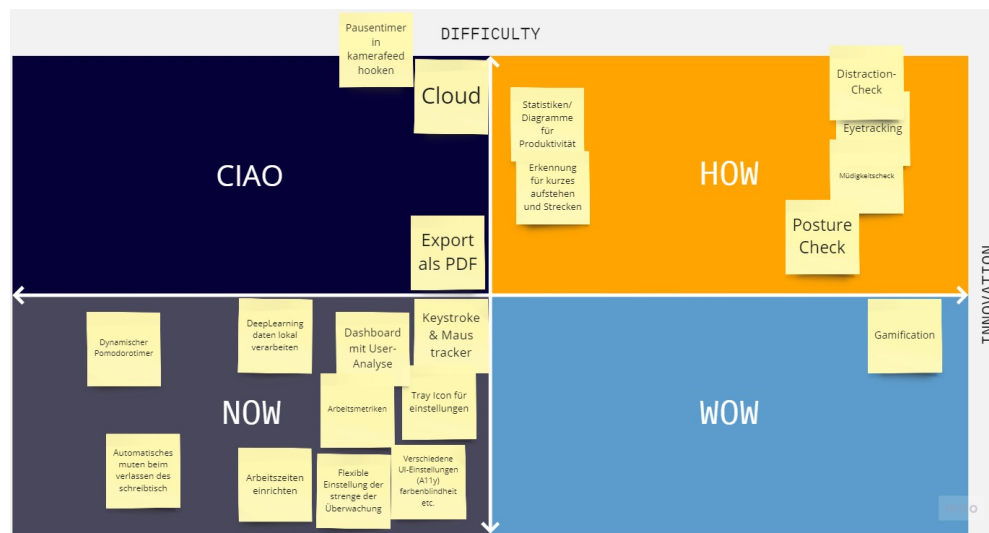


Fig. 1 How Wow Now (Ciao) Matrix

4 Implementation

The implementation of TaskVue involved a multifaceted approach, utilizing a combination of React for the front-end to ensure a responsive and intuitive user interface, and Django for the back-end to manage data effectively. Electron was employed to wrap the application for desktop use, providing a seamless cross-platform experience and accessing the APIs of the operating system the program is running on. The integration of YOLO V7 facilitated advanced image recognition features, enhancing the app's capability to interact with visual data.

4.1 Architecture

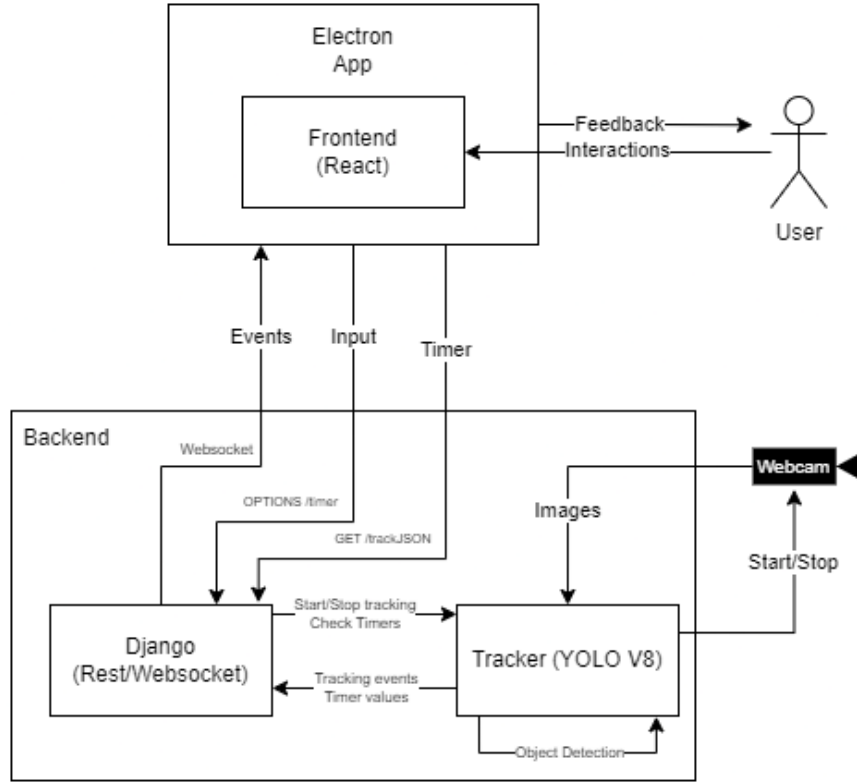


Fig. 2 Task Vue architecture focussed on detection

TaskVue's architecture leverages Electron not only as a cross-platform framework for the React front-end but also to access the system's notification API, which is crucial for providing feedback by alerting users when potential distractions are detected. The architecture intricately weaves together the front-end and back-end operations, ensuring seamless data flow and real-time responsiveness. The tracking module, empowered

by YOLO V8, performs object detection and logs each event with precise timestamps and cumulative values. The logging enables the application to provide meaningful insights and feedback to the user, promoting sustained focus and productivity. The architecture of TaskVue is strategically cohesive, with interconnected modules that allow for both integration and expansion. While the modules are not completely independent, this interconnection facilitates a robust and scalable framework. For instance, enhancements such as new tracking features or performance boosts through CUDA optimization are feasible and can be integrated without overhauling the core system.

References

- [1] Methods, D.T.: Design Thinking Methods (2021). <https://designthinking-methods.de/3Ideenfindung/how-wow-now.html>
- [2] Smartpedia: How-Now-Wow-Matrix (2021). <https://t2informatik.de/en/smartpedia/how-now-wow-matrix/>