# Optimizing Task Scheduling for Software Developers Based on Cognitive Load

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## Abstract

This research proposal aims to optimize task scheduling for software developers by correlating cognitive load with task performance. Using both subjective (NASA-TLX) and objective (EEG alpha power) measures of cognitive load, we will assess various software development tasks such as coding, debugging, code review, documentation, and collaboration.

## What?

The goal is to find out if there is a relationship between cognitive load and different software development tasks, and to create a good task schedule based on the results by also including the developer's emotional state [4]. This task scheduling model helps to improve the productivity and well-being of software developers.

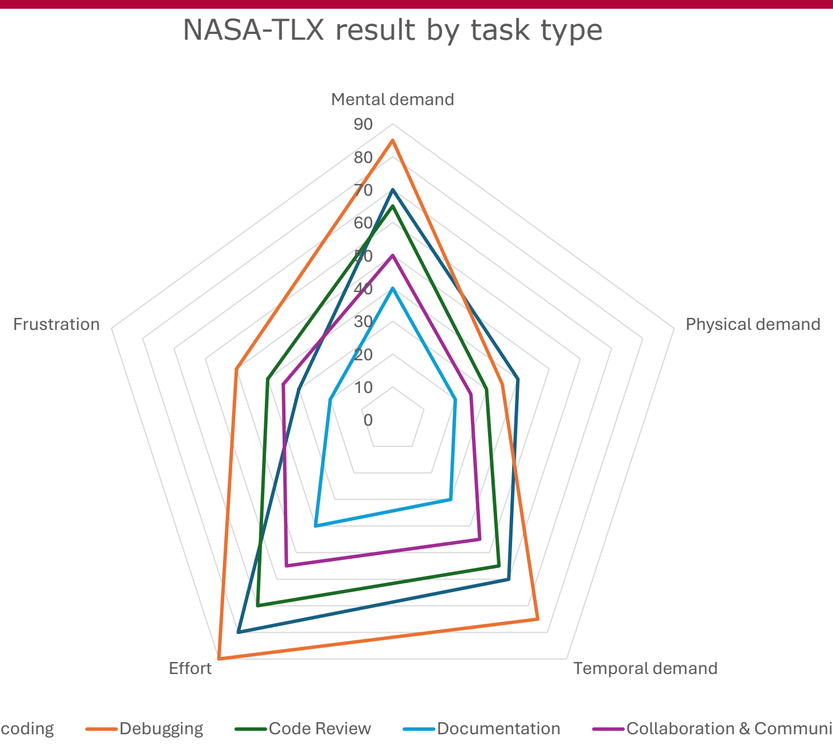
## Why?

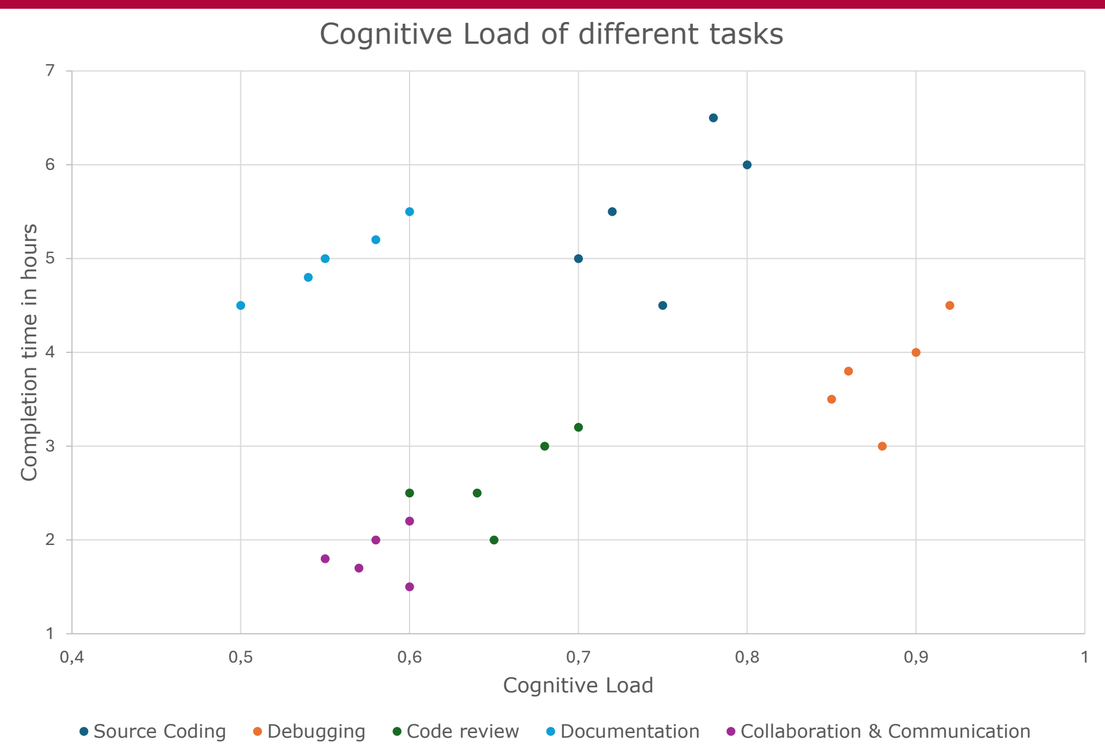
- Scheduling tasks based on current cognitive load should improve task quality and satisfaction in the development process.
- High cognitive load leads to decreased developer performance and increased error rates [2].
- Current research focuses only on code comprehension tasks and overlooks other tasks [1].

## How?

- Conduct a study with software developers of different experience levels, as cognitive load varies for each person [1].
- Measure cognitive load based on task and developer using an EEG headset, pupil dilation, and eye tracking.
- Measure task performance quantitatively (time taken) and qualitatively (error rate).
- Subjective assessment of perceived workload using self-reported NASA-TLX surveys [3].
- Identify patterns with help of machine learning to correlate cognitive load data with task types and performance metrics [5].

## Result




- Source coding and debugging are high load tasks
- Code review is a moderate load task
- Documentation and Collaboration & Communication are low load tasks

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