Institute for Machine Tools and Industrial Management (*iwb*)
School of Engineering and Design
Technical University of Munich

Student Assistant (m/f/d) - Development of the iwb Smart Production Lab

Motivation

Are you passionate about the future of manufacturing, Industry 4.0, and digitalization? Do you want to gain hands-on experience in a cutting-edge research environment? The Institute for Machine Tools and Industrial Management (iwb) at TUM is a leading institution in production science. Our Smart Production Lab serves as a vital research and demonstration platform for developing and testing innovative manufacturing concepts. We are seeking a motivated and tech-savvy student assistant (m/f/d) to actively contribute to the enhancement of our lab's digital capabilities, applying theoretical knowledge to practical challenges. This is your chance to work with state-of-the-art technology and contribute directly to tangible results in a smart factory environment.

Objective

The primary goal of this position is to support the ongoing development and improvement of digital tools within our Smart Production Lab. You will play a key role in enhancing our data acquisition and visualization capabilities, making manufacturing processes more transparent and efficient.

Your specific tasks will include:

1. Enhancement of a Smart Camera Application for Quality Control:

   - Further develop and optimize an existing application utilizing smart camera technology for automated quality inspection during production steps (as conceptually shown in Image 1).

   - This may involve refining image processing algorithms, improving application logic, or enhancing integration with our manufacturing systems.

2. Development of a KPI Dashboard with Microsoft Power BI:

- Design, implement, and deploy a dynamic dashboard to visualize Key Performance Indicators (KPIs) from our manufacturing processes.

- Connect to our Tulip Manufacturing Execution System (MES) interfaces to retrieve relevant production data.

- Structure, model, and transform the data within Power BI for effective analysis.

- Create clear, insightful, and visually appealing visualizations.

- Optimize the dashboard layout and interactivity specifically for display on a Samsung Flip screen within the lab.

Qualifications

We are looking for a proactive and reliable student who meets the following criteria:

- Field of Study: Currently enrolled as a student (Bachelor or Master) in Engineering (Mechanical, Electrical, Industrial), Computer Science, Informatics, Data Science, Wirtschaftsinformatik (Business Informatics), or a closely related technical field.

- Technical Skills:

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- o Essential: Strong interest and initial practical experience with Microsoft Power BI or comparable Business Intelligence and data visualization tools.

- o Advantageous: Basic programming skills (e.g., Python) are beneficial, especially for the smart camera task or data handling.

- o Advantageous: First experiences with image processing concepts or libraries (e.g., OpenCV).

- o Advantageous: Familiarity with Manufacturing Execution Systems (MES), databases, or API interactions; specific knowledge of Tulip is a plus.

- Interests: Genuine enthusiasm for Smart Manufacturing, Industry 4.0, IoT, and data-driven production environments.

- Personal Attributes:

  - o Analytical mindset and a structured approach to problem-solving.

  - o Ability to work independently and take initiative.

  - o Good communication skills (German and/or English).

  - o Team player mentality.

Why *iwb*?
- Direct involvement in innovative research projects at a leading university institute.

- Hands-on experience with modern Industry 4.0 technologies (Smart Cameras, MES, BI Tools, Interactive Displays).

- Opportunity to significantly contribute to a real-world Smart Factory demonstrator.

- A dynamic and supportive team environment.

- Flexible working hours (e.g., approx. 8-15 hours per week, adjustable to your study schedule).

- Compensation according to TUM standards for student assistants (HiWi).

Contact
M.Sc. Julian Stang
Department Production Management and Logistics
Mail: julian.stang@iwb.tum.de
Tel.: +49 89 - 289 15549