



# Towards standardized, open-source measurement procedures to enable Machine Learning in a big data approach

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FROM IDEA TO PROTOTYPE







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## Information flow: Walk this way





# Breaking it down





#### **Our Situation: Current Approaches**

Manipulate



**Current Measurement** Procedures

**Automated Analysis** 





#### Comparability of results?



Microbiological Cabinet: Current Measurement Procedures































## Let's go All-in ...-One



Concept of an All-In-One approach

Open Source Hard-/ Software

Old Single-board computer (that was lying around)



Pitiful Workforce Aka. Bachelor Student (that was lying around)



#### Automated Traversing & Analysis Tool (AT-AT)



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**FH MÜNSTER** University of Applied Sciences

**KDK** KOMPETENZZENTRU DIABETES KARLSBU

LEIBNIZ-INSTITUT FÜR PLASMA-FORSCHUNG UND TECHNOLOGIE E.V. KLINIKUM KARLSBURG HERZ- UND DIABETESZENTRUM

Prototyping a ROS based 3-axis Traversing System with onboard temperature logging

> To obtain the academic degree **Bachelor of Science** Department of Engineering Physics Fachhochschule Münster

> > $\begin{array}{c} {\operatorname{Bachelor}} {\operatorname{Thesis}} \\ {\operatorname{by}} \end{array}$

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#### Video: One-Click Solution





![](_page_11_Picture_0.jpeg)

![](_page_12_Picture_0.jpeg)

## Lab Display Converter (LDC)

![](_page_12_Figure_2.jpeg)

![](_page_13_Picture_0.jpeg)

![](_page_14_Picture_0.jpeg)

# DIY! Set up your own OLE

- Do whatever I want?

Basically Yes! Just keep it simple, follow Standards and keep it open (data / software / hardware)

Why would I? 

You end up with structurized, standardized big data sets

Why would I need that? 

![](_page_14_Picture_8.jpeg)

![](_page_14_Picture_9.jpeg)

![](_page_15_Picture_0.jpeg)

# **Open Laboratory Environment (OLE)**

![](_page_15_Figure_2.jpeg)

![](_page_16_Picture_0.jpeg)

# BACKUP

![](_page_17_Picture_0.jpeg)

#### (Image) Sources

- https://www.elastic.co/de/kibana/
- https://grafana.com/
- Flaticon.com
- https://github.com/ad0409/open-laboratory-environment
- www.rasppishop.de
- https://doi.org/10.3390/math8071104
- Digikey.com
- https://emojipedia.org/apple/ios-14.6/
- Lego.com
- EUREGIO BioMedtech Center:

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