

Neural Network Approach for Camera-Based Indoor Positioning

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Aims



1.

Investigating current neural network-based methodologies for indoor positioning.

3.

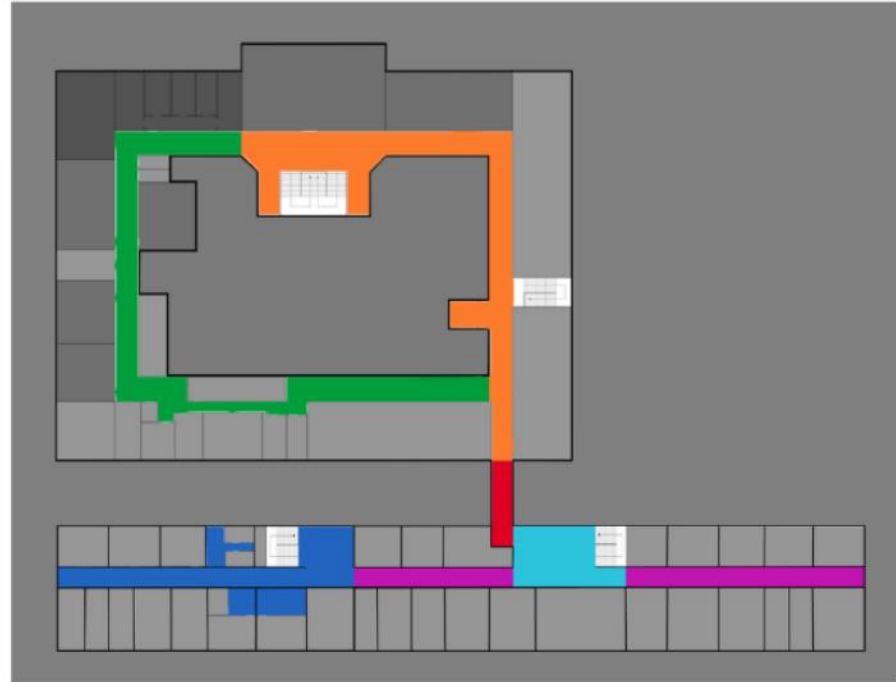
Evaluating the accuracy of the proposed method within a selected facility, examining its performance under image modifications (e.g., blurring) and in the context of the positioning task (classification versus regression).

2.

Introducing a neural network model for indoor positioning utilizing primarily camera imagery and outlining the procedure for video data acquisition.

4.

Exploring the potential integration of the proposed model with other neural networks or its incorporation into an existing indoor positioning system.



L. Hajduková: Camera-based indoor localization accuracy improvement (2021)

Next steps

Data collection

- diverse data from video recordings
- different recording angles, lighting conditions and the presence of people
- wide-angle lenses

Initial classification model

- segmentation of the building
- max. 5 classes

Anonymization

- security
- different methods and techniques

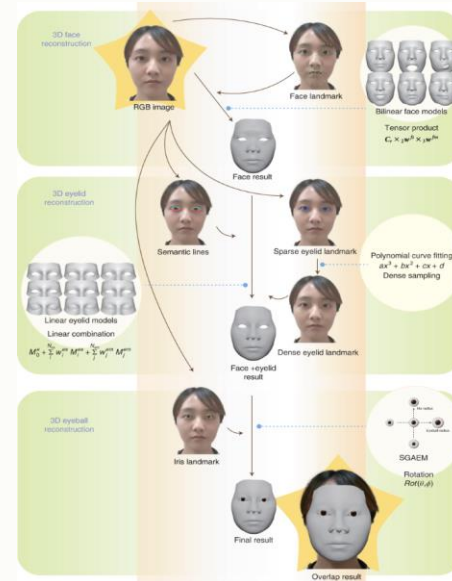
Segmentation

- the building division into segments
- cross-segment boundary solution

Anonymization

Computer vision techniques

- face detection (object detection)
- blur, censor, pixelation
- long exposure photography simulation



Anonymization

Automated object removal inpainter

- ML
- semantic segmentation and EdgeConnect architectures

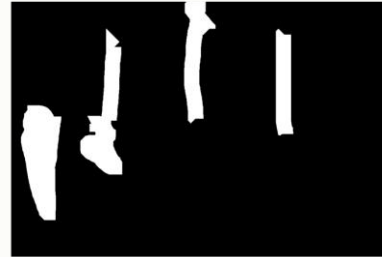


Anonymization

LaMa

- Resolution-robust Large Mask Inpainting with Fourier Convolutions

mask



img



img * mask



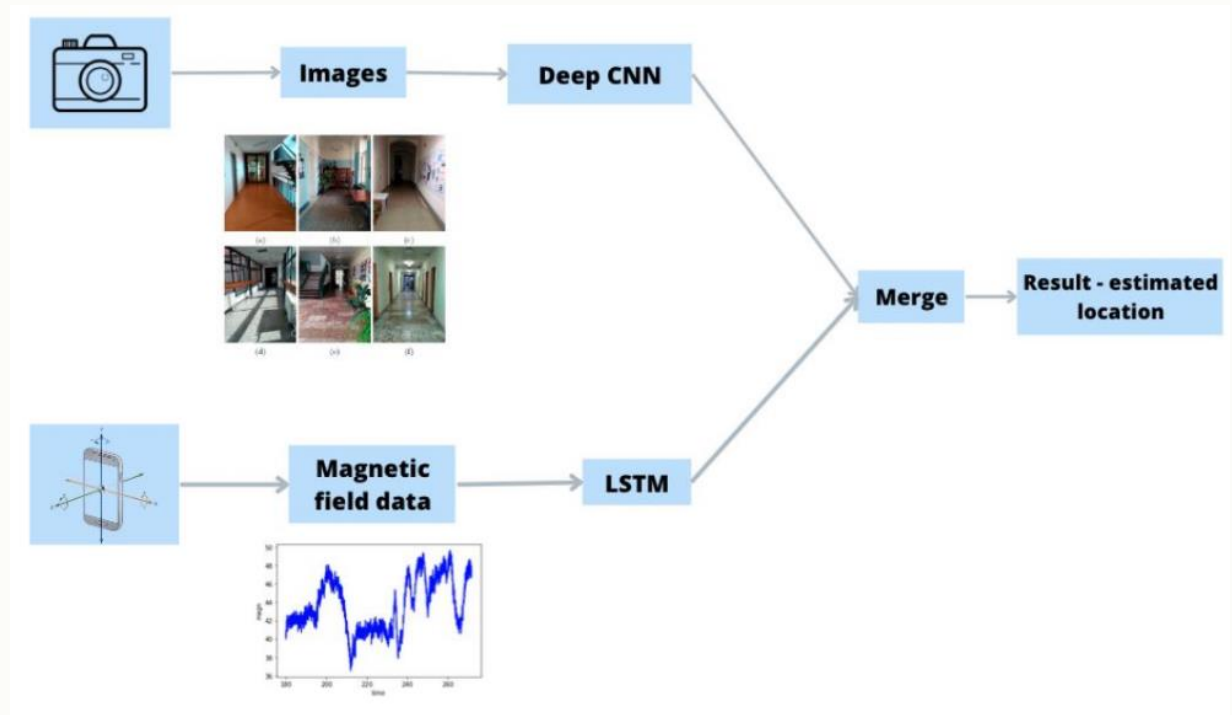
inpainting result



Further steps

Neural Networks

- CNN classification model
- Regression model
- .
- .
- merge 2 NN model



***potential inclusion of AR**

Thanks !

