

AI for Health

An ITU Focus Group

In collaboration with WHO

Dr. Markus Wenzel

Fraunhofer HHI, Berlin

markus.wenzel@hhi.fraunhofer.de

About



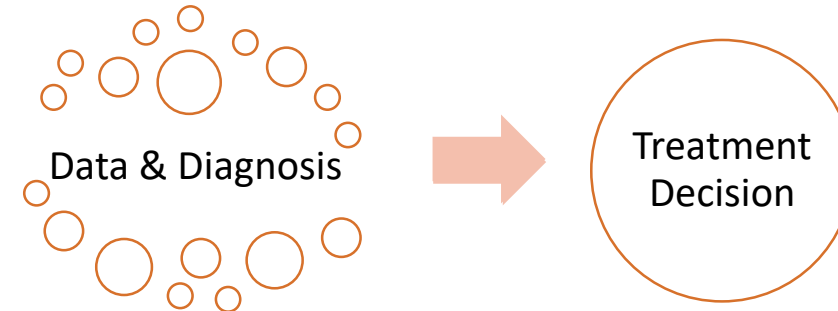
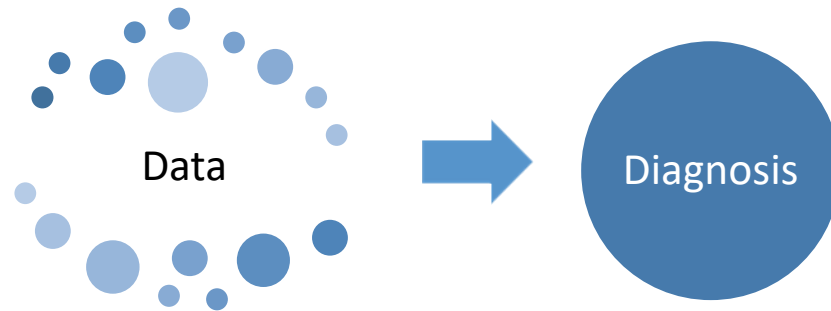
AI for Health

An ITU Focus Group
In collaboration with WHO

- AI offers substantial potential for improving health
 - Early detection · diagnostics · treatment decision support · self-management · improved outcomes · risk identification
- For worldwide adoption of AI in health, a **standardized** system of **evaluating AI** is required
- Focus Group: open platform that will fill this requirement
- Goal: standardized framework for benchmarking/evaluation of AI
- Expected duration 2018-2020

Diagnostic & decision support with AI

Evaluate mapping: $y = f(x)$



From data...

- Clinical records (SNOMED CT, HPO)
- Text (symptom description)
- Images (microscope, CT, MRI, X-ray)
- Laboratory results
- Sensor time series (ECG, EEG)

...to diagnosis/treatment decision

- International Classification of Diseases (ICD)
- International Classification of Health Interventions (ICHI)



AI for Health

An ITU Focus Group
In collaboration with WHO

The Focus Group's process

1. Invite proposals for use cases and data
 - Select relevant use cases
 - Collect undisclosed test data (per use case)
 - Description of (format of) test data x and (possible) output y
 - Agree on benchmarking metrics for comparisons
2. Invite submissions of AI
3. Benchmark AI with undisclosed test data:
 - AI generates output variables y from undisclosed test data x
 - Compare output with “ground truth” (labels/annotations)

[Reports and specifications provide a transparent documentation]



AI for Health

An ITU Focus Group
In collaboration with WHO

Current status

25-27 Sep. 2018 · Workshop + Meeting A · WHO-HQ · Geneva

14-16 Nov. 2018 · Workshop + Meeting B · Columbia University · NYC

22-25 January 2019 · Workshop + Meeting C · EPFL · Lausanne

2-5 April 2019 · Workshop + Meeting D · Shanghai

t.b.c.



AI for Health

An ITU Focus Group
In collaboration with WHO

Workshop + Meeting A: deliverables

25-27 Sep. 2018 · WHO-HQ · Geneva

- Constructive meeting
- Setup of the basic FG operation and structure
- Talks from medical, AI, public health, and industry experts
- White paper published
- Drafts: thematic classification scheme, data acceptance criteria, and data handling policy
- Call for proposals (CfP) for use cases, benchmarking, and data



AI for Health

An ITU Focus Group
In collaboration with WHO

Workshop + Meeting B: deliverables

14-16 Nov. 2018 · Columbia University · NYC

- Talks from medical, AI, regulatory, IT security, public health, and industry experts
- 15 proposals for use cases of "AI for Health" presented (only 7 weeks after CfP!)
- 8 use cases considered for entering the stage of a feasibility study
- Updated CfP for use cases, benchmarking, and data



Projects adopted for initial feasibility analysis

1. Assessing the risk of breast cancer in histopathological images
2. Mining medical data to understand Alzheimer's disease
3. Guiding anti-venom selection with snake-identification imagery analysis
4. Classifying autism through analysis of brain imagery
5. Evaluating the accuracy of "symptom checker" applications
6. Diagnosing skin lesions through imagery analysis
7. Evaluating and reducing the elderly's risk of falling
8. Analyzing imagery to detect diabetic retinopathy and prevent vision loss

<http://itu.int/go/fgai4h> → Login to collaboration site



AI for Health
An ITU Focus Group
In collaboration with WHO

(Updated) Call for proposals: Use cases, benchmarking, and data

Title · Overview · Relevance · Impact · Existing work · Feasibility · Data availability · Data quality · Annotation/label quality · Data provenance · Benchmarking · Organizer



AI for Health

An ITU Focus Group
In collaboration with WHO

Workshop + Meeting C and D

C 22-25 January 2019 · EPFL · Lausanne

D 2-5 April 2019 · Shanghai

Work towards step 2 of the process (invite submissions of AI technology)



AI for Health

An ITU Focus Group
In collaboration with WHO

Get involved: Submit your data!

- Your data could become the reference data set for a targeted health problem
- Your data (including data collection methods and associated publications) could receive global exposure
- Evaluation could provide insight into your data and assist your future data collection

Get involved: Submit your AI!

- Your technology will be thoroughly evaluated through our framework
- Governments, regulators, insurance companies, and other users can apply the results of your algorithm evaluation and provide recommendations
- Evaluation could initiate a world-wide adoption of your technology



AI for Health

An ITU Focus Group
In collaboration with WHO

Thank you!

- In particular: École Polytechnique Fédérale de Lausanne!
- **Meeting C: 23-25 January**
- <http://itu.int/go/fgai4h>
- Meeting D: Shanghai, 2-5 April