

Free-Hand
Sketching



Trauma &
PTSD



Research
Question



Methodology



Screening
PTSD

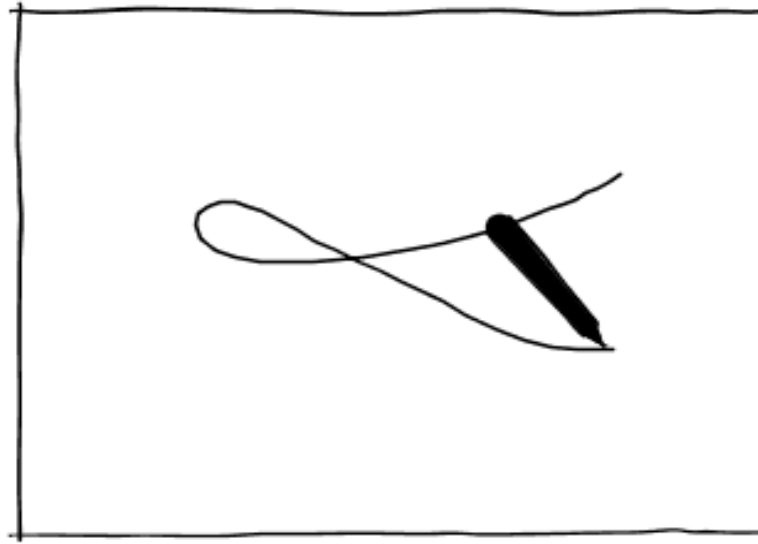


Implication



Future Work

Free-Hand Sketching



Pencil



Paper

Post-Traumatic Stress Disorder (PTSD)

Free-Hand Sketching



Trauma & PTSD



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Screening PTSD



Implication



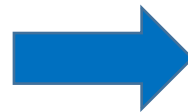
Future Work



Resource constraints



Difficulties in traumatic self-disclosure



Diagnosis of PTSD



Social stigma around mental health issues

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WHO World
Mental Health Survey
Reference: Kessler et al., 2017

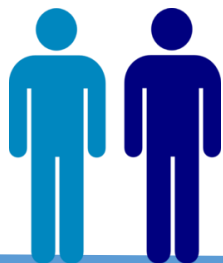


24 Countries
~68k people

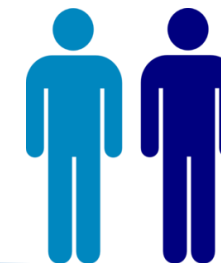


70% participants experience
Lifetime traumas

Low income
communities



High income
communities



Reference: Atwoli et al., 2015

Can we utilize quantitative methods to identify patterns from free-hand sketches and use them to screen for PTSD?

Free-Hand Sketching



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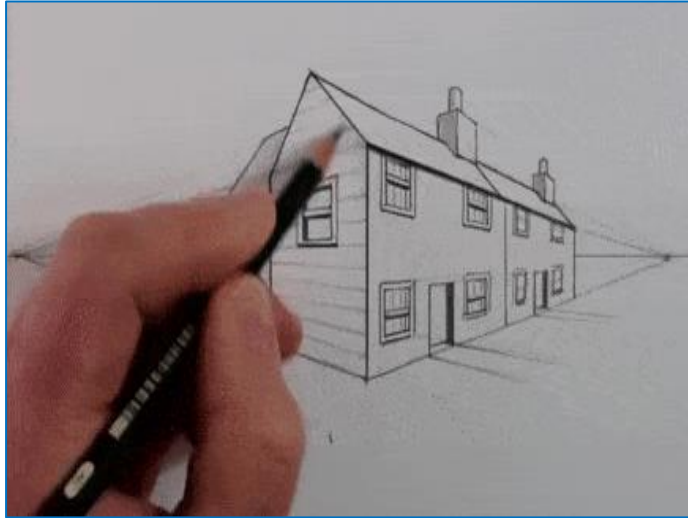
Screening PTSD



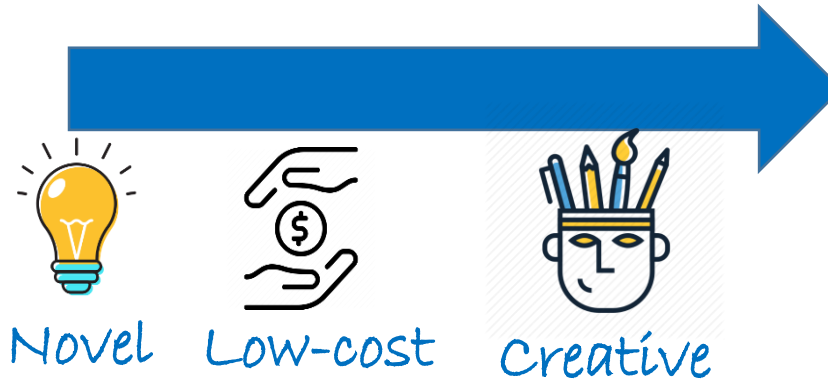
Implication



Future Work



Free-hand sketching

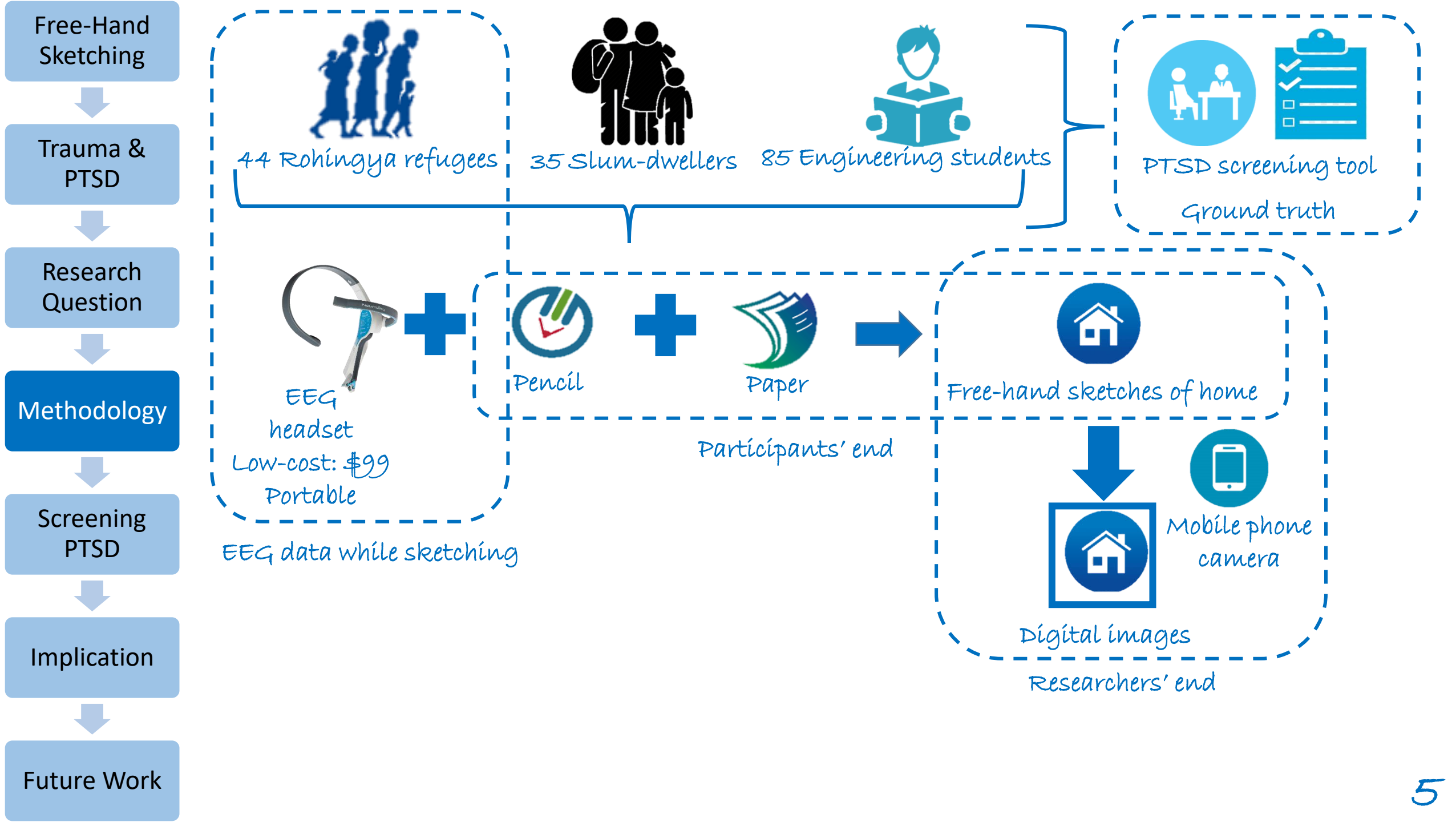


Screening PTSD

Leveraging Free-Hand Sketches for Potential Screening of PTSD

Farhana Shahid, Wasifur Rahman, M. Saifur Rahman, Sharmín Akther Purabí, Ayesha Seddīqa, Moín Mostakím, Farhan Feroz, Tanjír Rashíd Soron, Fahmída Hossain, Nabíla Khan, Aníka Binte Islam, Nípi Paul, Ehsan Hoque, and A. B. M. Alím Al Islam.





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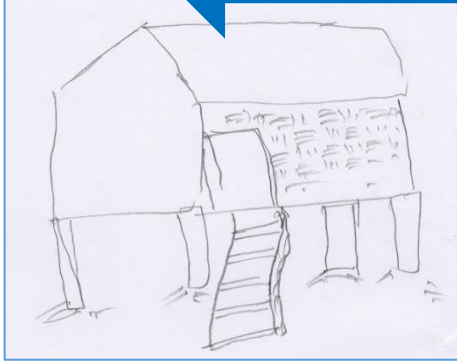
Screening
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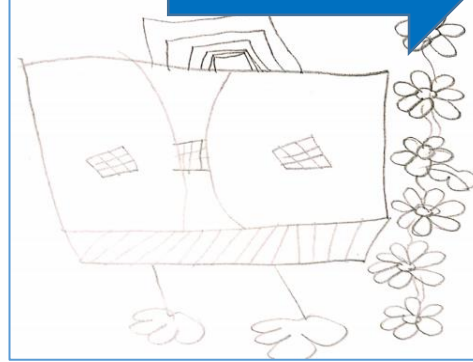
Future Work

Qualitative Sketch Themes

Shelter



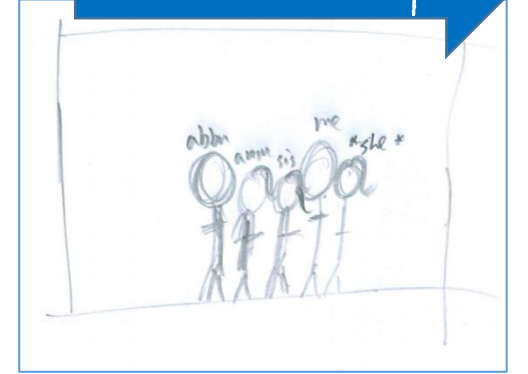
Nature



Activities



Relationships



Free-Hand
Sketching



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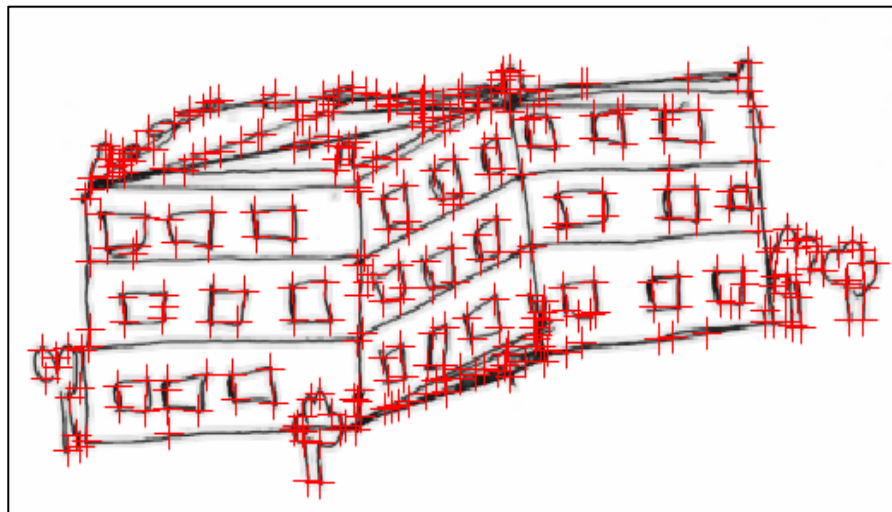


Implication



Future Work

Quantitative Sketch Features



332 corners

Number of corners

Number of strokes

Average length of strokes



19 strokes, average length: 57

Logistic Regression Models for Screening PTSD

Free-Hand Sketching



Trauma & PTSD



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Methodology



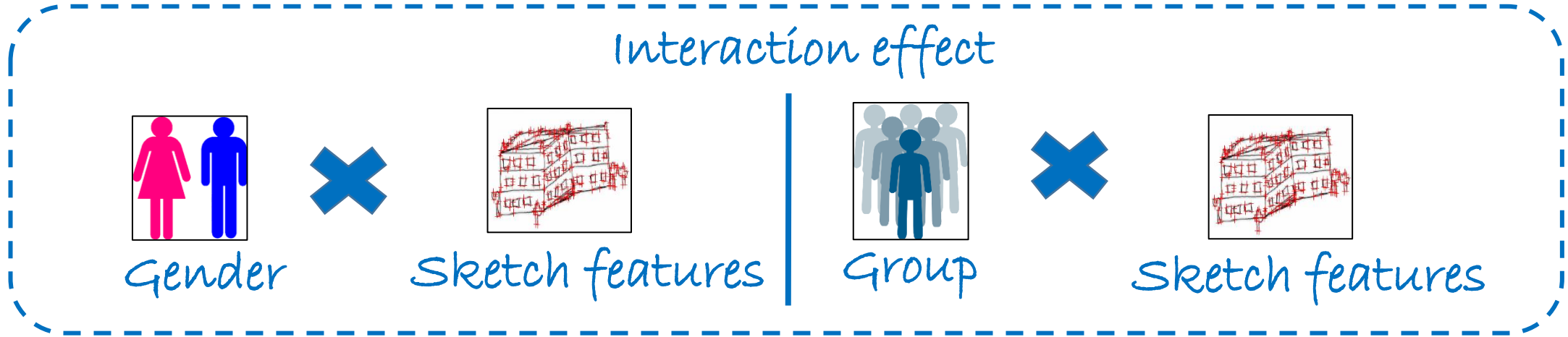
Screening PTSD



Implication



Future Work



Accuracy: 87.9%, F1-score: 0.876

Combining data from all participants

Free-Hand
Sketching



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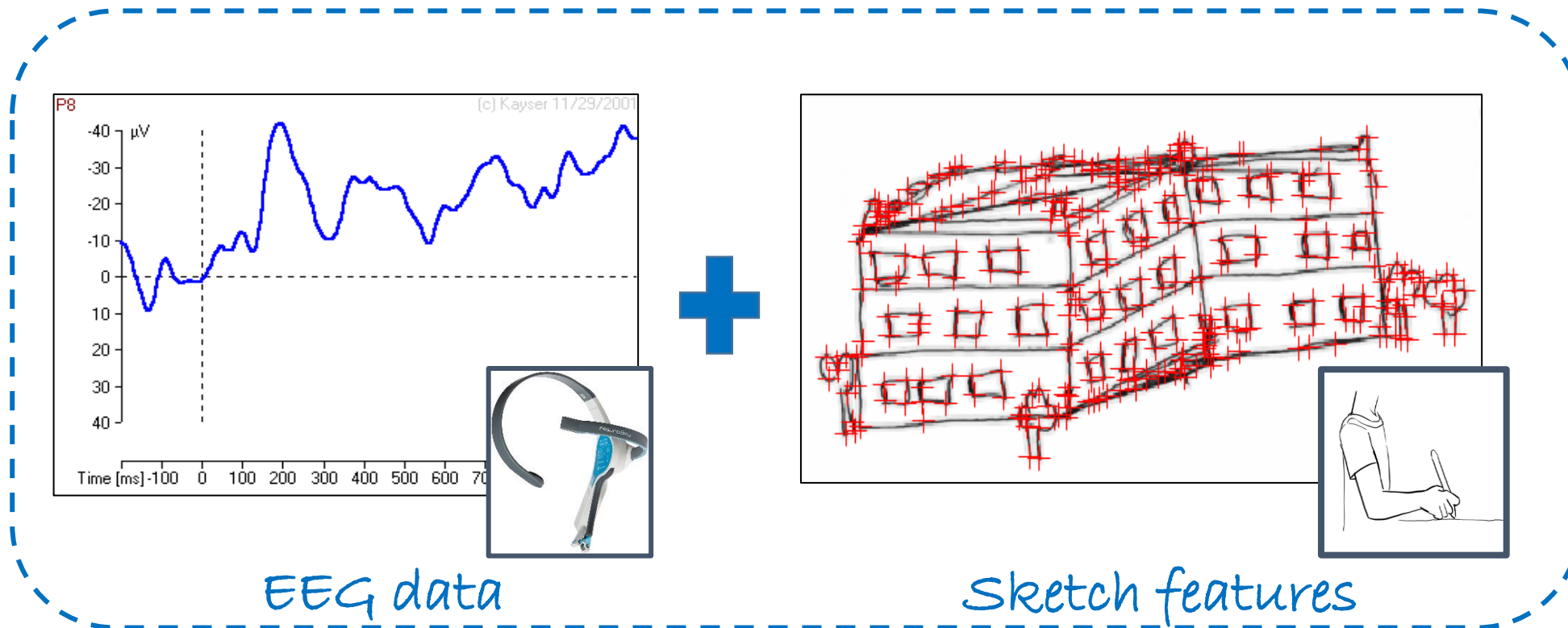


Implication



Future Work

Random Forest Model for Screening PTSD



Accuracy: 99.3%, F1-score: 0.993

Using data from Rohingya refugees

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Future Work



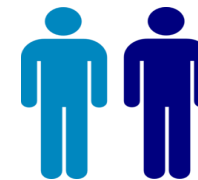
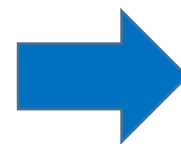
Pencil



Paper



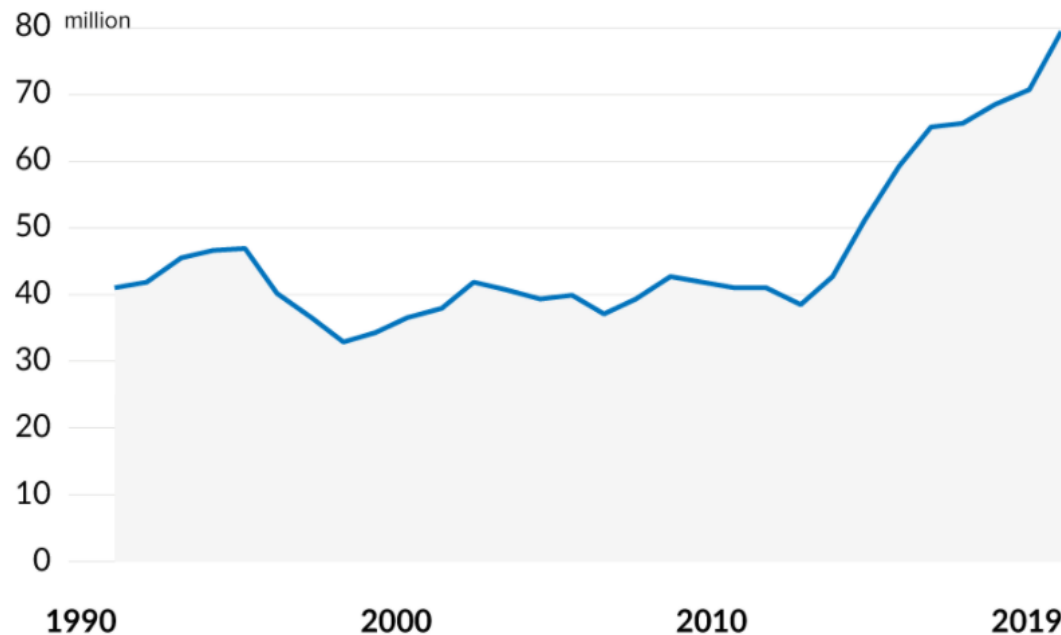
Mobile phone camera



Resource-stricken populations

79.5 MILLION forcibly displaced people worldwide at the end of 2019

Source: UNHCR / 18 June 2020



26M

Refugees

20.4M

Refugees under
UNHCR's mandate

5.6M

Palestine refugees under
UNRWA's mandate

45.7M

Internally displaced people

Source: IDMC

4.2M

Asylum-seekers

3.6M

Venezuelans displaced abroad

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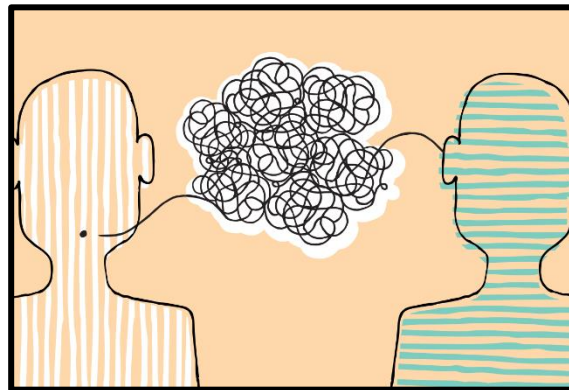
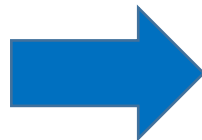
Implication



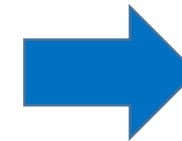
Future Work



Non-verbal art form



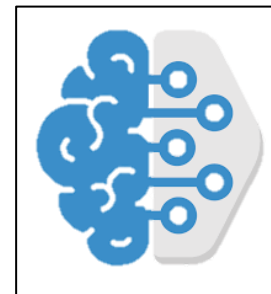
Communication barrier



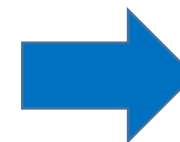
Difficulties in traumatic
self-disclosure



Image processing
algorithm



Machine learning
algorithm



Standardized, repeatable,
objective

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Implication



Future Work

Our Work



Low-cost



Non-verbal
assessment



Low-resource
communities

Future Work



Collect data from large diverse populations

Thank You