

# Pubic Symphysis-Fetal Head Segmentation and Angle of Progression

Grand Challenge Review

Anna Putina

Facultat d'Informàtica de Barcelona,  
Universtat Politècnica de Catalunya

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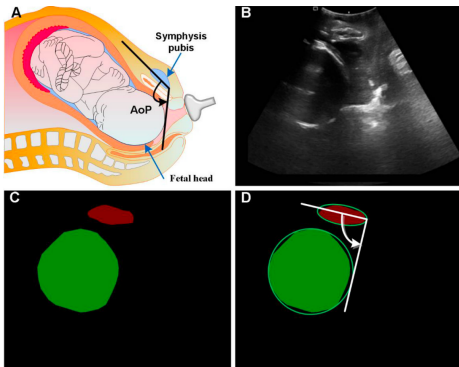
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# Clinical Background and Data



**Figure 1.** Assessment of FD in the birth canal by measurement AoP [2]

**Data:** 4000 MHA files for image data ( $3 \times 256 \times 256$ ) and for labels ( $256 \times 256$ , pixels labeled as 0 - bg, 1 - PS, or 2 - FH).

**Goal:** Segmentation algorithms, predicting images ( $256 \times 256$ ) containing labeled pixels.

- *Risk:* maternal and perinatal morbidity
- *Pathology:* longer labor duration (slow progression of fetal descent(FD))
- *Accurate assessment* of FD by monitoring the FH station *remains challenge* in guiding obstetric management
- Manual segmentation of SP-FH from transperineal US (TPU) images is the most reliable, but *extremely time-consuming*
- Automatic measurement algorithms based on AI are expected to be *efficient, reproducible and objective* [1]

# Metrics

Team	AOP	$HD_FH$	$HD_{PS}$	$ASD_FH$	$ASD_{PS}$	$HD_{ALL}$	$ASD_{ALL}$	$DICE_FH$	$DICE_{PS}$	$DICE_{ALL}$	Score
Gregor Koe	6.544	12.631	7.638	3.896	2.409	13.448	3.486	0.930	??	0.924	0.9418
marwankefah	7.970	10.699	7.559	3.307	2.995	12.059	2.981	0.940	??	0.935	0.9416
Yaoyang Qiu	7.647	12.459	7.661	3.616	2.257	13.615	3.238	0.936	??	0.930	0.939
Gongping Chen	8.558	14.011	9.051	3.869	2.620	15.334	3.517	0.931	0.860	0.924	0.931
Fangyijie Wang	8.719	14.009	10.829	3.984	2.982	15.809	3.579	0.931	0.858	0.925	0.928
Hongkun Sun	9.276	15.795	11.536	4.723	3.114	17.560	4.265	0.918	0.831	0.910	0.923
Pengzhou Cai	12.199	20.031	14.068	7.099	4.208	21.873	6.058	0.879	0.804	0.872	0.897
YuboTan	14.048	16.041	16.023	5.199	7.260	20.251	5.106	0.910	??	0.894	0.892

## Kitten's Remark

Sample text.

## Feline's Important Theorem

Sample text in a charming red box.

## Examples

Sample text in a paw-sitively green box. The title of the box is "Kitten's Examples".

# A Kitten's Two-column Slide

This is some text in the first column.

Here's the famous equation:  $E = mc^2$ .

- First fluffy item
- Second fluffy item

In the second column, you'll find more purr-fection. This layout is as cute as a kitten's whiskers.

Thank you for your attention!  
Any questions?

# References

- [1] Jieyun Bai et al. "A framework for computing angle of progression from transperineal ultrasound images for evaluating fetal head descent using a novel double branch network". In: *Frontiers in Physiology* 13 (2022). ISSN: 1664-042X. DOI: 10.3389/fphys.2022.940150. URL: <https://www.frontiersin.org/articles/10.3389/fphys.2022.940150>.
- [2] Yaosheng Lu et al. "The JNU-IFM dataset for segmenting pubic symphysis-fetal head". In: *Data in Brief* 41 (2022), p. 107904. ISSN: 2352-3409. DOI: <https://doi.org/10.1016/j.dib.2022.107904>. URL: <https://www.sciencedirect.com/science/article/pii/S2352340922001160>.