TOOTH FAIRY3 CHALLENGE

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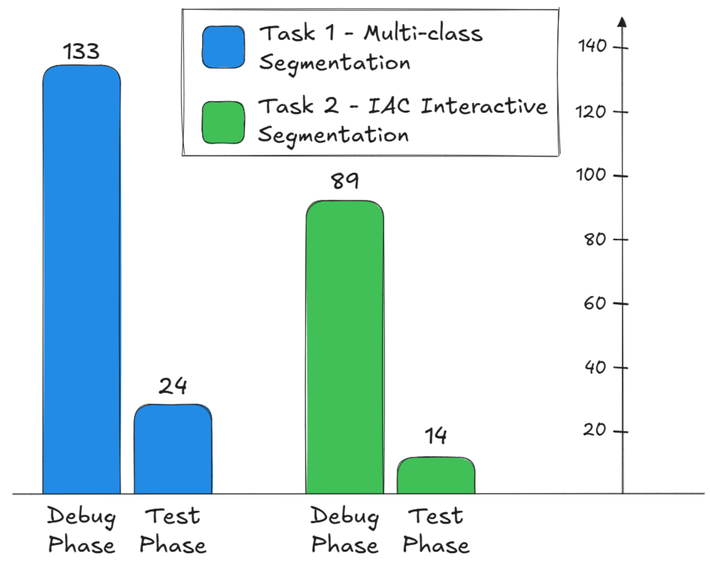
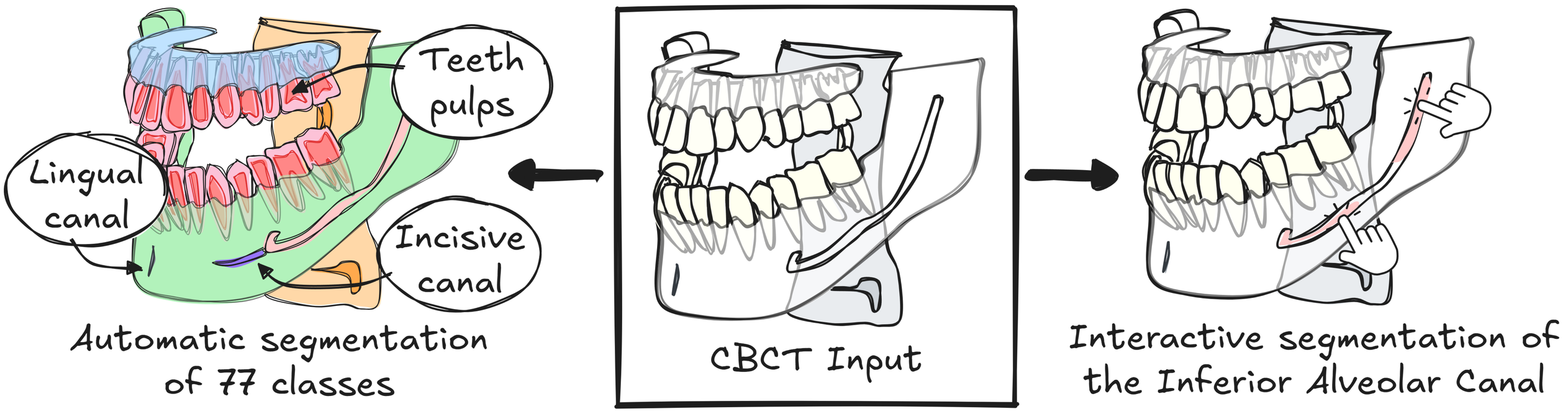
About the Challenge

ToothFairy3 is the third edition of the challenge. It is organized by the **University of Modena and Reggio Emilia** in collaboration with **Radboud University Medical Center** and **Karlsruhe Institute of Technology**, and hosted on Grand-Challenge. This year, the dataset includes **77 anatomical classes** for a total of **532 CBCTs** and introduces a new track for **interactive Inferior Alveolar Canal segmentation**. Solutions are evaluated against **50** new private cases. **Execution time** has been included as a main-ranking metric to reflect the real-world need for fast and reliable clinical tools.





Challenge Results

Task 1 - Multi-class Segmentation

Participant	Avg. Rank	Avg. Runtime (s) ↓	Avg. Dice ↑	Avg. HD95 ↓
Zhi Qin Tan (TAIR Lab)	3.1	41	0.84	38.17
Chang Kai Ji (sjt_u_ieee_2-426lab)	3.7	17	0.77	94.77
Fan Xiao (Black_Myth)	3.8	90	0.85	33.23

Both challenge tasks were evaluated using **Dice** and **HD95** segmentation scores, with Task 2 also including an **AUC** score. The **weighted average runtime** per case significantly influenced the final rankings. Winning solutions **balanced accuracy and speed**.

Task 2 - IAC Interactive Segmentation

Participant	Avg. Rank	Avg. Runtime (s) ↓	Avg. IAC Dice AUC ↑	Avg. IAC Dice ↑	Avg. IAC HD95 AUC ↑	Avg. IAC HD95 ↓
Zhi Qin Tan (TAIR Lab)	1.7	101	4.33	0.87	10.75	2.15
Fan Xiao (Black_Myth)	2.1	168	4.31	0.86	14.80	2.29
Chang Kai Ji (sjt_u_ieee_2-426lab)	3.4	16	3.81	0.76	166.58	33.32

What's Next?

ToothFairy4M, an open platform for managing maxillofacial data that enables clinicians to **upload, visualize, automatically annotate, classify, and manually refine** diverse maxillofacial scans. The system also supports **clinical report collection,** both text and voice are recorded, laying the groundwork for **text-to-image** and **image-to-text synthesis**.

TF4M - Demo

Dataset

Grand-Challenge