Title : Combining Contourlet Method and U-Net to Segment and Locate Abnormalities on Coronary Artery Image

Full name of Speaker : Pham The Bao

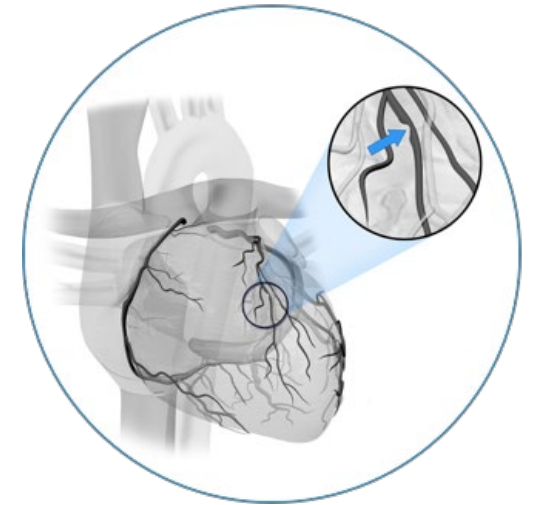Institution: Sai Gon University

Background :

From WHO:

- In 2019, the world had 17.9 million deaths - 32% of global deaths.

- The leading cause of death in the group of cardiovascular diseases.

In clinical diagnosis:

- X-rays are the gold standard for diagnosing abnormalities.

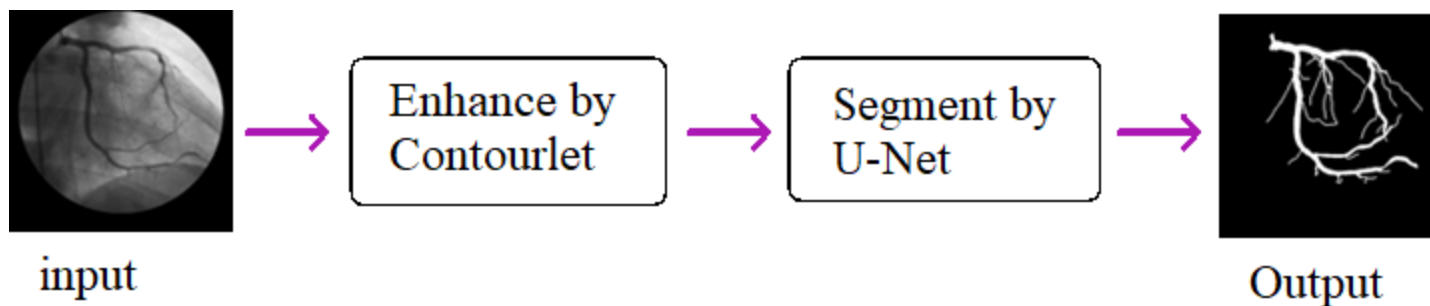- Manual diagnostics, time consuming and highly specialized.

Targets:

Problem 1: Segmentation Coronary Artery Image
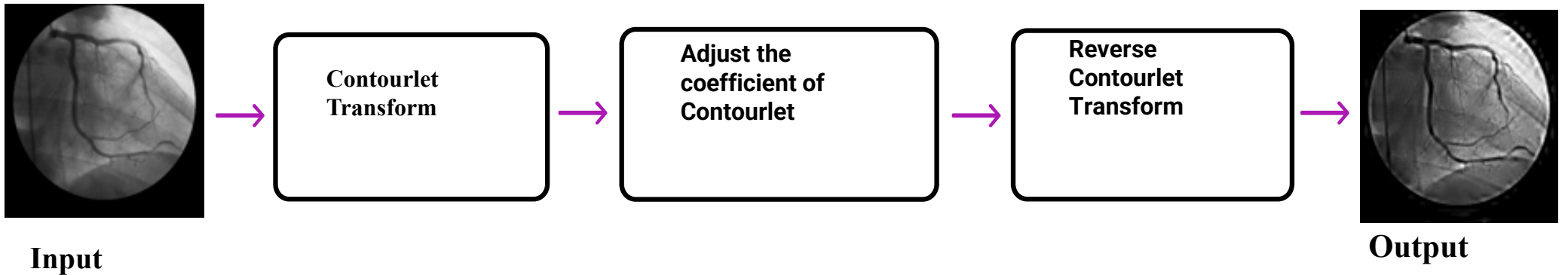
Problem 2: Detection Abnormalities
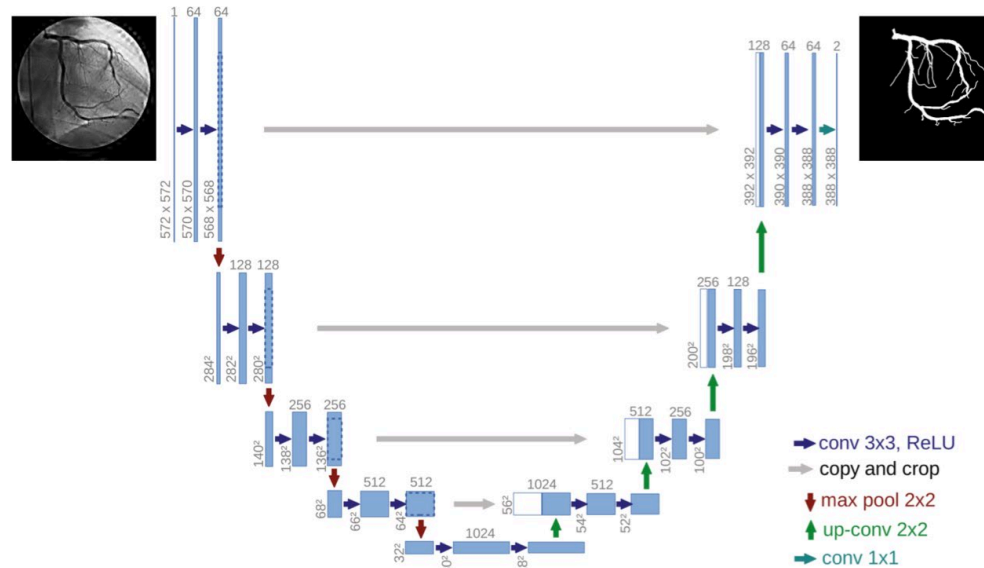
Problem 1: Segmentation Coronary Artery Image

Problem 2: Detection Abnormalities

Phase 1: Enhance by Contourlet

Input

Contourlet Transform

Adjust the coefficient of Contourlet

Reverse Contourlet Transform

Output

Phase 2: Segmentation

Phase 1: Preprocessing

- edge smoothing

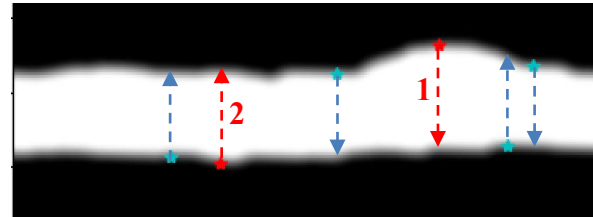- Rotate the horizontal vessel

Input   Output

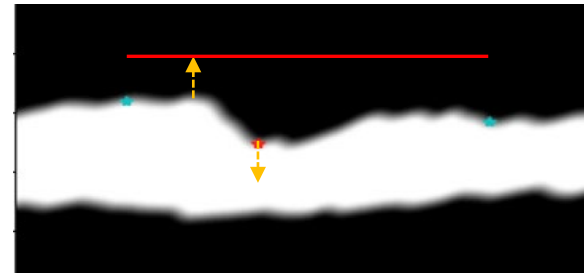**Phase 2: Detect candidates**

Phase 3: Detecting abnormalities

1. Solving abnormality detection by new methods.
2. Helping doctor to have quick features to decision.
3. Collaborating to collect data and solve the problem, and publishing together.

1. New solution
2. Public data to researcher over the world to research.
3. Collaboration: new partners, new colleagues, … work together.

1. Target: detect the abnormalities on Coronary Artery Image
2. Method: : Combining Contourlet Method and U-Net to Segment and Locate Abnormalities by new algorithm
3. Scientific and societal impact:
   - Solving abnormality detection by new methods.
   - Helping doctor to have quick features to decision.
   - Collaborating to collect data and solve the problem, and publishing together.

Thanks for Your Attention.

ptbao@sgu.edu.vn