**Motivation**

One of the most important aspects of computer vision is depth estimation. It gains more importance since more applications need this ability. One aspect of this is simulation of fog or smoke. Realistic fog simulation depends on the depth of objects in the scene, among other factors. In this project, I construct a pipeline to estimate depth, blur and brighten the target image, and use this to construct a foggy version.

**Related Work**

- Depth estimation based on multiple images or a video
- Fog simulation and rendering
- Dehazing based on single image

**Data Flow**

1. **Disparity Calculation**: SGM or BM
2. **Depth Map**
3. **Weight Map**
4. **Foggy Image**
5. **Blurred Image**

**Equation**

\[
F(x) = W(x) \cdot \{C \cdot (1 - \alpha) + \alpha \cdot B(x)\} + I(x) \cdot \{1 - W(x)\}
\]

**References**

[1] Sun Kong He Tian, An Algorithm of imaging simulation of fog with different visibility, 2015