1. Ambiguity with facial images
   1. Labeling facial images include ambiguity
      1. ”Detecting Decision Ambiguity from Facial Images” [link](http://cmp.felk.cvut.cz/ftp/articles/cech/Jahoda-FG-2018.pdf)
         * Jahoda *et al* proposed a method that leverages facial images to detect decision ambiguity.
         * Although the idea was novel, this method was only limited to decisions during the TV show. We are trying to extend the scope of the ambiguity of facial images not limited to the important decisions in the case of the TV show.
      2. ”The Perspective Face Shape Ambiguity” [link](https://www-users.cs.york.ac.uk/wsmith/papers/ambiguity.pdf)
         * Smith proposed a new way to fit 3D images to 2D vertex positions since considerable variation in appearance occurs during this process. He also commented that this process trigger ambiguity and disrupt human recognition of unfamiliar faces.
      3. ”Inherently Ambiguous: Facial Expressions of Emotions, in Context  [link](https://pdfs.semanticscholar.org/642f/ebf5e6b672af475a1e3de64e0e57ad2ca0a2.pdf)
         * Hassin *et al* found that the structure of facial muscles inherently contain ambiguity.
         * (‘Our results imply that facial expressions of emotions

are inherently ambiguous, not in the sense that, in isolation,

they look amorphous, but rather that context can easily shift

their categorization. This ambiguity is structured: it is constrained by similarity. When facial expressions are very similar, context can easily swing FEC from one category to

another. When they are less similar, the context is less powerful (but still quite potent)).’ - 논문에 있는 내용입니다

* + 1. Due to the ambiguity, we need to lessen the workloa

1. Mitigate workload of labelers
   1. “Counting with the Crowd” [link](http://www.vldb.org/pvldb/vol6/p109-marcus.pdf) (”Human-powered Sorts and Joins” [link](http://marcua.net/papers/qurk-vldb2012.pdf)은 일단 제외)
      1. Marcus *et al* maintained that displaying a certain number of grids at once outperforms the traditional method which is sampling item labels one by one.
   2. ”Visual Cues to Reduce Errors in a Routine Procedural Task” [link](https://pdfs.semanticscholar.org/923e/47eef5c64e8e77e4e95f415a2235c84e86c8.pdf) (from: Proceedings of the Annual Meeting of the Cognitive Science Society)
      1. Chung *et al* asserted that visual cues help to reduce the human error in computer-based routine procedural tasks. Especially the visual cue which alternates red and yellow blinking arrows on a specific button helped to record 0% error compared to other baselines.
   3. By leveraging the explored strategies, we are going to adopt both design considerations on our system to help labelers reduce the workload of labeling