<table>
<thead>
<tr>
<th>Name of Student:</th>
<th>Chan Hoi Chun</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cheung Wai Shan</td>
</tr>
<tr>
<td></td>
<td>Leung Kit Yee</td>
</tr>
<tr>
<td>Name of Supervisor:</td>
<td>Dr. Ho-Chi HUNANG</td>
</tr>
</tbody>
</table>
LCD projectors, the focus in this project, have become popular in recent years. LCD projectors provide functionalities ranging from home entertainment to office presentation. However, the larger projection image size we get, the heavier and bulkier projector we have. As a result, projectors are usually limited in their use to a fixed location. If the volume and weight could be reduced, the functionalities could be extended and LCD projectors would become more popular. This was the intent in this project.

There were three main objectives of this project:
- Display a clear image without flickering problem,
- Accept S-video and TV signal as the input signals, and
- Reduce the size of the projector.

In order to achieve these objectives, the major tasks of this project were:
- Design a double-frame rate video interface controller,
- Minimize the PCB layout,
- Add a TV tuner, and

Fig. 1 The system block diagram of pocket-sized projector
Fig. 2 shows the characteristics of double-frame rate driving. Both interlace and progressive versions have similar patterns in ‘FRAME’ and ‘FLM’. The main difference between them is ‘DISP’ and ‘SCLK’ given in the dialog box below.

![Double-Frame Rate Control Signals of Interlace and Progressive Versions](image)

The size of main circuit PCB is greatly reduced to **6.7cm x 8.2cm**, 70% of the reference PCB. As a result, it was more flexible to design a streamlined and small mechanical kit.
In addition, a TV tuner was implemented as an accessory to enhance the functionality of the projector.

The main circuit board, optics, voltage regulator and fan were assembled, shown in fig.5. The TV tuner can be connected to the main circuit board by a composite-to-S-video converter.