**Overview**

**Problem:**
- Focus on machine reading comprehension style question answering
- Build a system to provide a correct answer to an answerable question by selecting a segment of text from corresponding paragraph, and abstain to unanswerable question

**Our contributions:**
- Build a system which combines BiDAF, Self-attention and Encoder Blocks
- Achieve EM score 65.65, F1 68.79 on dev set

**Data & Analysis**

**Dataset:**
- Use SQuAD 2.0, a new reading comprehension dataset that combines 100,000 answerable questions from SQuAD 1.1 with 53,775 unanswerable questions about same paragraph
- Custom training data (103191 examples), dev data (6078 examples)

**Example:**

**Question:** Why was Tesla returned to Gospic?
**Context paragraph:** On 24 March 1879, Tesla was returned to Gospic under police guard for not having a residence permit. On 17 April 1879, Milutin Tesla died at the age of 60 after contracting an unspecified illness (although some sources say that he died of a stroke). During that year, Tesla taught a large class of students in his old school, Higher Real Gymnasium, in Gospic.
**Answer:** not having a residence permit

**Data analysis:**
- Based on training data

**Attention Visualization**

- Extract and visualize CQQ attention matrix (left) and Q2C attention matrix of the 37th example in dev
- Our model is able to capture related words in both context and question

**Result**

<table>
<thead>
<tr>
<th></th>
<th>EM</th>
<th>F1</th>
<th>AvNA</th>
</tr>
</thead>
<tbody>
<tr>
<td>BiDAF baseline</td>
<td>57.82</td>
<td>61.03</td>
<td>67.75</td>
</tr>
<tr>
<td>BiDAF + Char Embed</td>
<td>60.09</td>
<td>63.29</td>
<td>69.92</td>
</tr>
<tr>
<td>Our Single Model</td>
<td>62.91</td>
<td>66.38</td>
<td>73.04</td>
</tr>
<tr>
<td>Our Ensemble Model</td>
<td>65.65</td>
<td>68.79</td>
<td>74.01</td>
</tr>
</tbody>
</table>

**Error Analysis**

Our model works well at locating relevant words in the context based on the question, but struggles on modeling long-term dependencies and questions that require logical reasoning.

**Reference**