Visualization of the patent claims structure to improve their readability

Shichao Dong
u5135470@anu.edu.au
Dr Gabriela FERRARO
NICTA and The Australian National University, Canberra, ACT, Australia

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Outline

• Project description
• Background
• Motivation
• Literature review
• Implementation
• Working plan
Goal: Study different methods to improve the text readability then using one possible method to improve the structured patent claim readability through visualization technique.
Background – readability

• “Clear communication is important to ensure efficiency in communication and eliminate risks for misunderstandings. With written language, text readability measures this clarity or ease in understanding.”

Background – Patent claims

- In a patent or patent application, the claims define, in technical terms, the extent of the protection conferred by a patent, or the protection sought in a patent application.
- All patent claims are either independent or dependent.
- Independent claims stand alone, and do not reference any other claim.

Example:
- 1. A chair having only two legs. (independent)
- 2. The chair of claim 1, further comprising at least one leg made of wood. (dependent)
- 3. The chair of claim 2, wherein at least a portion of the chair is covered with a fabric. (dependent)

Source:
Motivation – why improve readability

1. Language learning
   1. People with cognitive reading disability.
   2. Medical records
2. Selection for different group education

Education

Health

Law

1. Contract
2. Licence
3. Patent Claim
**Motivation – the Patent claim example**

1. A boring tool comprising a body, a plurality of cutting blades supported by the body so as to be movable along paths equally incline at an acute angle to an axis of rotation of the body, outer ends of the blades having cutting edges and projecting beyond the body, characterised by a rotatable blade advancing member having a screwed shank within a threaded bore on the axis of rotation and a head abutting inner ends of the blades for advancing and retracting the blades on their paths consequent upon rotation of the shank within the bore, and means operable from the exterior of the body for causing rotation of the blade advancing member.

2. **A boring tool according to claim 1** characterised in that the means for causing rotation of the blade advancing member comprises a worm rotatable by a detachable handle or key and a meshing worm wheel secured to a shaft extending from the shank of the blade advancing member and co-axial therewith.

3. **A boring tool according to claim 1 or 2** characterised in that the tool advancing member has a head with a conical surface abutting the inner ends of the cutting blades.

4. **A boring tool according to claim 1** characterised in that the head lies within a cylindrical cavity extending inwardly from one end of the body member, the open end of the cavity being closed by a plug which backs a frusto-conical pressure pad supporting the cutter blades.

5. **A boring tool according to any of claims 1-4** characterised in that the cutter blades are guided by holes in the body which lie in planes radial to the axis of rotation.

6. **A boring tool according to any of claims 1-5** characterised in that a serrated drive spigot co-axial with the axis of rotation of the tool is mounted on one end of the body remote from the cutting blades and for insertion within a corresponding socket in a drive adaptor, the tool being detachably securable to the adaptor by a ring nut engagesble with a screw threaded portion of the adaptor.

7. **A boring tool according to claim 6** characterised in that the adaptor has a threaded hole to engage the screwed end of a power drill drive shaft.

## Literature review

<table>
<thead>
<tr>
<th>General Text Readability</th>
<th>Improving Text Readability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patent claim readability</td>
<td>Patent claim readability improvement</td>
</tr>
<tr>
<td>Readability improvement through visualization</td>
<td></td>
</tr>
</tbody>
</table>
Implementation – The input example


The EPO does not accept any responsibility for the accuracy of data and information originating from other authorities than the EPO; in particular, the EPO does not guarantee that they are complete, up-to-date or fit for specific purposes.

1. A boring tool comprising a body, a plurality of cutting blades supported by the body so as to be movable along paths equally incline at an acute angle to an axis of rotation of the body, outer ends of the blades having cutting edges and projecting beyond the body, characterized by a rotatable blade advancing member having a screwed shank within a threaded bore on the axis of rotation and a head abutting inner ends of the blades for advancing and retracting the blades on their paths consequent upon rotation of the shank within the bore, and means operable from the exterior of the body for causing rotation of the blade advancing member.

2. A boring tool according to claim 1 characterised in that the means for causing rotation of the blade advancing member comprises a worm rotatable by a detachable handle or key and a meshing worm wheel secured to a shaft extending from the shank of the blade advancing member and co-axial therewith.

3. A boring tool according to claim 1 or 2 characterised in that the tool advancing member has a head with a conical surface abutting the inner ends of the cutting blades.

4. A boring tool according to claim 1 characterised in that the head lies within a cylindrical cavity extending inwardly from one end of the body member, the open end of the cavity being closed by a plug which backs a frusto-conical pressure pad supporting the cutter blades.

5. A boring tool according to any of claims 1-4 characterised in that the cutter blades are guided by holes in the body which lie in planes radial to the axis of rotation.

6. A boring tool according to any of claims 1-5 characterised in that a serrated drive spigot co-axial with the axis of rotation of the tool is mounted on one end of the body remote from the cutting blades and for insertion within a corresponding socket in a drive adaptor, the tool being detachably securable to the adaptor by a ring nut engageable with a screw threaded portion of the adaptor.

7. A boring tool according to claim 6 characterised in that the adaptor has a threaded hole to engage the screwed end of a power drill drive shaft.

Implementation

Steps:

1. Parse the claim structures
2. Visualize the structure of patent claims with simple approach
3. Visualize the structure of patent claims with complex approach

Result:

Build a software to visualize the structured patent claim
1. A boring tool comprising a body, a plurality of cutting blades supported by the body so as to be movable along paths equally inclined at an acute angle to an axis of rotation of the body, outer ends of the blades having cutting edges and projecting beyond the body, characterised by:
   a rotatable blade advancing member having a screwed shank within a threaded bore on the axis of rotation and a head abutting inner ends of the blades for advancing and retracting the blades on their paths consequent upon rotation of the shank within the bore, andmeans operable from the exterior of the body for causing rotation of the blade advancing member.

2. A boring tool according to claim 1 characterised in that the means for causing rotation of the blade advancing member comprises a worm rotatable by a detachable handle or key and a meshing worm wheel secured to a shaft extending from the shank of the blade advancing member and co-axial therewith.

3. A boring tool according to claim 1 or 2 characterised in that the tool advancing member has a head with a conical surface abutting the inner ends of the cutting blades.

4. A boring tool according to claim 1 characterised in that the head lies within a cylindrical cavity extending inwardly from one end of the body member, the open end of the cavity being closed by a plug which backs a trussic-coulic pressure pad supporting the cutting blades.

5. A boring tool according to any of claims 1-4 characterised in that the cutting blades are guided by holes in the body which lie in planes radial to the axis of rotation.

6. A boring tool according to any of claims 1-5 characterised in that a serrated drive spigot co-axial with the axis of rotation of the tool is mounted on one end of the body remote from the cutting blades and for insertion within a corresponding socket in a drive adaptor, the tool being detachably securable to the adaptor by a ring nut engageable with a screw threaded portion of the adaptor.
Working plans

1. Literature review : 2~3 week
2. Software implementation : 2~3 week
3. Report writing : 2~3 week
Thanks for listening

Questions?