

2021 Patent Landscape Analysis

Model Answer

For the Patent Landscape Analysis, candidates were asked to perform three tasks based on a provided set of patent publications numbers on either chewing gum, robotic sensing or gaming. This model answer is an example of how the tasks should have been performed, using the robotic sensing topic since this was the topic for the majority of the candidates.

The workbook shows the types of graphs and visualizations that would assist in solving the tasks. It was taken into account that e.g. the numbers of families per assignee or numbers of families per year may vary per tool and how the data set was reduced.

Candidates were asked to explain their choices, in order to be able to assign marks. Explanations of choices are not included in this model answer, but only a few examples are provided of what the explanation should cover.

Task 1: Data processing (Max 20 points)

Please provide a family reduction of the collection and submit a workbook with your results.

See workbook covering family reduction.

Please share which reduction method you used and why you used the selected method.

Candidates were expected to explain their choice of type of patent family. For example, why you chose to use simple or extended families and what are pros and cons with the selected reduction method, so the candidates shows that they understand the theory around patent families and understand the family reductions in their preferred tool.

Please discuss your method of assignee harmonization and give five examples of assignees that were harmonized (show the starting and harmonized assignee group).

See workbook covering assignee harmonization. Candidates were expected to visually show at least five harmonized families (the different names included in the harmonization) and explain how they cleaned up the assignees (e.g., with help of a tool, codes for assignees, manually, etc.).

Task 2: Data analyzing (Max 30 points)

Please create charts presenting:

- **Show the general trend of the collection over time. Explain your choice of date field for this visualization.**

See workbook covering Charts. Candidates were expected to discuss the date field they have used for the analysis, i.e., why they have used either (first) publication date, (first) application date, (first) priority date etc.

- **Provide a visualization of the top 25 assignees.**

See workbook covering Charts.

- **Provide a visualization of assignees over time. Explain your choice of date field for this visualization.**

See workbook covering Charts. Candidates were expected to discuss the date field they have used for the analysis, i.e., why they have used either (first) publication date, (first) application date, (first) priority date etc.

- **Provide a visualization of top technologies using patent classification schemes (select hierarchy level and explain your choice)**

See workbook covering Charts. Candidates were expected to discuss the patent class hierarchy level they have used for the analysis.

- **Categorize your collection into at least three sub-categories and explain your choice.**

See workbook covering Charts. Candidates were expected to discuss the choice of the at least three categories.

- **Provide a visualization of categories over time. Explain your choice of date field for this visualization.**

See workbook covering Charts.

- **Provide a semi-automated technology clustering of the collection. For example, a spatial concept map. Explain the value of this type of analysis.**

See workbook covering Clustering. Argumentation for 'value' will not be included in model answer; however, it is expected that the candidate should explain how the semi-automated technology clustering can be used in patent landscaping and what knowledge can be extracted.

- **Provide a citation analysis of the collection. For example, a citation network diagram. Explain the value of this type of analysis.**

See workbook covering Clustering. Argumentation for 'value' will not be included in model answer; however, it is expected that the candidate should explain how citation networks can be used in patent landscaping and what knowledge can be extracted.

Task 3: Reporting (Max 20 points)

Please provide a list of the insight generated from the visualization from task 2.

- Out of the major industry robot companies (Kuka/Medea, ABB, Fanuc, Honeywell), only Fanuc is performing well, KuKa/Medea in the middle range.
- The market seems interesting to software companies like Alphabet, Microsoft, Amazon.
- iRobot, Ava Robotics and IAM robotics are holding patent families with high citation rank, resulting in high impact of the rather small portfolio in the examined range. There is no actual rise in the iRobot portfolio (amongst other player).
- The portfolio of LG had the highest rise in the recent years.
- Fanuc, with the largest portfolio owns 7% of the patent families in that range.
- The landscape map shows individual "technology islands", not really connected to each other.

- Softbank is not a bank, but a telecommunication and media-group.
- Evaluate:
 - Fanuc, LG: large portfolio, large increase
 - Samsung: New in that technology, good start
 - Eventually, Kawasaki / Alphabet

Write an executive summary, including actionable next steps based on your analysis.

The market of Robot sensing is very heterogeny, with Fanuc owning 7% of the patent families. The market is interesting to software companies like Alphabet, Microsoft, etc. There are also some interesting newcomers like iRobot, IAM Robotics, AVA Robotics, Bossa Nova Robotics, etc. with interesting high ranked technology. Special attention should be given to GE, as the value of its portfolio is raising very fast so that in the near future GE will take the first rank from Fanuc.

There are several smaller players, where technology can be bought in (including a bank).

Proposed next steps:

- Evaluate the Portfolios of GE and Fanuc at a deeper level, to see their split in technology
- Identify technology in the hand of small players which will give a surplus if combined.