1. Please scan your HKUST card for attendance
Topics

- Introduction
- Information sources for Engineering and Science Innovation
- Search tools
- Referencing
In LANG 1002 library workshop (“Game Changer”), we covered:

- Concepts and Keyword (Mind Map)
- Information Sources (Newspaper Articles, Magazine Articles, etc)
- Search Tools - Google & search tips, PowerSearch, ProQuest Library database
- APA (how to cite source)
In this workshop, we will

- Identify 3 other information sources for finding Science and Engineering innovation including
  - Patents
  - Trade Magazines
  - Academic Journals

- Develop keywords for effective searching
- Use appropriate search tools & search them wisely
- Making proper citation (referencing)
About Your Project Topic

- Devise an **Innovative Engineering Idea** in your field

- **In Your Proposal Report:**
  - **Describe** a unique and innovative concept
  - **Articulate the purpose** of the innovation
  - **Demonstrate an understanding of** the engineering theories and knowledge that underline the innovation
  - **Outline alternative approaches and establish** that their innovation presents the best solution
  - **Include appropriate** sketches, models, design drawings or other visuals
  - **Evaluate** the innovation in terms of **benefits and limitations**.

- Refer to your course book for other requirements
The Most Innovative Company

https://goo.gl/forms/1kYLsc4y4y4SA6PJXm1
# The 2018 Most Innovative Company (top 10)

<table>
<thead>
<tr>
<th>Forbes</th>
<th>USA Today</th>
<th>Fast Company.com</th>
</tr>
</thead>
<tbody>
<tr>
<td>ServiceNow (Software &amp; Services)</td>
<td>IBM</td>
<td>Apple</td>
</tr>
<tr>
<td>Workday (Software &amp; Services)</td>
<td>Samsung</td>
<td>Netflix</td>
</tr>
<tr>
<td>Salesforce.com (Software)</td>
<td>LG Electronics</td>
<td>Square</td>
</tr>
<tr>
<td>Tesla</td>
<td>Intel</td>
<td>Tencent</td>
</tr>
<tr>
<td>Amazon</td>
<td>Canon</td>
<td>Amazon</td>
</tr>
<tr>
<td>Netflix</td>
<td>Alphabet</td>
<td>Patagonia</td>
</tr>
<tr>
<td>Incyte (Pharmaceuticals, Biotech)</td>
<td>Qualcomm</td>
<td>CVS Health</td>
</tr>
<tr>
<td>Hindustan Unilever (household)</td>
<td>Toyota Motors</td>
<td>The Washington Post</td>
</tr>
<tr>
<td>Naver</td>
<td>Microsoft</td>
<td>Spotify</td>
</tr>
<tr>
<td>Facebook</td>
<td>Taiwan Semiconductor Manufacturing</td>
<td>NBA</td>
</tr>
</tbody>
</table>

Forbes: [https://www.forbes.com/innovative-companies/#fd1ce4d1d654](https://www.forbes.com/innovative-companies/#fd1ce4d1d654)
USA Today: [https://www.usatoday.com/story/money/business/2018/01/12/worlds-50-most-innovative-companies/1023095001/](https://www.usatoday.com/story/money/business/2018/01/12/worlds-50-most-innovative-companies/1023095001/)
Patent (專利)

1. **International Business Machines**
   - 2017 patent grants: 9,043
   - 2016 patent grants: 8,090
   - Country: United States
   - Products: Data management, IT services, application development

2. **Samsung**
   - 2017 patent grants: 8,894
   - 2016 patent grants: 8,470
   - Country: South Korea
   - Products: Mobile phones, televisions, home appliances

3. **LG Electronics**
   - 2017 patent grants: 4,469
   - 2016 patent grants: 4,013
   - Country: South Korea
   - Products: Mobile phones, televisions, home appliances

Source: https://www.usatoday.com/story/money/business/2018/01/12/worlds-50-most-innovative-companies/1023095001/
Patent

- A patent is an exclusive intellectual property right granted for an invention.

- Owner of the invention (often referred to as assignee) can exclude others from making, using, offering for sale, selling/importing the invention without the owner's permission in certain countries for a limited time, generally 20 years. Thus, patent protection helps promote creativity and innovation.

- In exchange for patent protection, owner of the invention must disclose sufficient technical details of his/her invention: its functions, how it operates, its composition and how it is manufactured. Therefore, patent is an valuable information source of technical knowledge for researchers and inventors.
Innovative Company - Lumos

Hong Kong start-up firm beats electric car giant Tesla to award

Now Lumos is hoping to be the Apple of cycling safety accessories from its office in the city’s Science Park

PUBLISHED: Saturday, 04 March, 2017, 5:10pm
UPDATED: Saturday, 04 March, 2017, 9:33pm

Co-founder:
Jeff Chen Hao-ren (HKUST)
Eu-wen Ding

News
Video
Patent
(Helmet & helmet system)
# How to Search for Patent?

- Individual patent office

- **Google Patent Search** ([https://www.google.com/patents](https://www.google.com/patents))

<table>
<thead>
<tr>
<th>Patent Office</th>
<th>Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States Patent &amp; Trademark Office (USPTO)</td>
<td>1790 (old) - present</td>
</tr>
<tr>
<td>European Patent Office (EPO)</td>
<td>1978 - present</td>
</tr>
<tr>
<td>World Intellectual Property Organization (WIPO)</td>
<td>1978 - present</td>
</tr>
<tr>
<td>Canada, China &amp; Germany Patent Offices</td>
<td>Unknown coverage</td>
</tr>
</tbody>
</table>

* All patents are available in both their original languages and in English
# Google Patent Search Exercise

## Google Patent > Setting > Advanced Search

<table>
<thead>
<tr>
<th>Inventor</th>
<th>Assignee</th>
<th>Keyword search</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steve Jobs</td>
<td>Apple</td>
<td>eye tracking vs “eye tracking”</td>
</tr>
<tr>
<td>Kwok Hoi Sing</td>
<td>Facebook</td>
<td>“eye tracking” – will miss documents which use tracking eye, eye</td>
</tr>
<tr>
<td>Elon Musk</td>
<td>Google</td>
<td>movement tracking</td>
</tr>
<tr>
<td>Mark Zuckerberg</td>
<td>Samsung</td>
<td>“phrase search” is useful when the distinct phrase is made up of</td>
</tr>
<tr>
<td></td>
<td>Sony</td>
<td>common words, e.g. system on chip, big data</td>
</tr>
</tbody>
</table>
Google Patent Search Exercise (cont’d)

Find patent for iPhone X in Google Patent (https://www.google.com/patents)

Search Tips with Keyword

- Think of the keywords that describe the features, functions, properties, etc.
- Think of alternative terms (similar meaning)
  E.g. Energy saving >>>> Power saving / energy efficient
  Gesture recognition >>>> motion recognition / motion detection
A trade magazine, also called a trade journal, is a magazine or newspaper whose target audience is people who work in a particular trade or industry (Wikipedia).

Provides industry trends, product news, new techniques, and other information of interest to a specific industry or profession.

Trade magazines are available at “Library Databases” including ProQuest, EBSCOHost Research Database.
Trade Magazines (cont’d)

ProQuest – Exercise
Find “trade magazines” articles about anti-snoring pillows

- snor* - snore, snores, snoring, snoreless, etc
- anti – reduce, abate, alleviate (alternative terms)

ProQuest

Search Tips:
- Subject
- Source Type
Scholarly Articles

- Written by experts in academic or professional fields.
- Must go through a peer review process before they are accepted for publication.
- Must include references (or sources); which allow the sources to be found by the reader.
- Scholarly articles can be found at Google Scholar, and “Library Databases” such as Scopus and Web of Science.
Scholarly Articles – Scopus

Helpful Tips
Example: search for articles about VR application in medical care

- Use “Phrase Search” – “medical care”

- Variants
  - VR or “virtual reality”
  - “medical care” or “medical treatment”

- Use filters (e.g. Subject Area, Document Type, Year)

- Get Full-text
  - View at Publisher
  - Find@HKUST
  - Interlibrary Loan: obtain articles from other libraries
Cite Sources – Give Credits for Ideas

- New designs, products, processes or technologies often build on previous works of others.
- One must acknowledge sources used to give credits for ideas

Example
- “Development of a Low-Cost Underwater Acoustic Communication System” is a winning project of the President’s Cup Prize 2017.
- In the full report, see how they cite sources within the text (in-text reference) and at the end of report (reference list).

http://libguides.ust.hk/lang2030
Cite Source – IEEE Style

IEEE Style (Institute of Electrical and Electronics Engineer Citation Style)


More examples on IEEE Style: http://libguides.ust.hk/basic-style
Wrap up

Engineering Innovation & Keywords

1. Think of **what you have learned** (or will learn) in your program and choose an aspect to focus on for your innovation proposal, e.g.
   - Speech recognition technology for mobile devices
   - Green buildings that absorb CO₂ emission
   - AI and robotics used in autopilot aviation system

2. Use **3 – 5 keywords** to describe your innovation

3. Search for **patents, trade magazines or scholarly articles** in addition to webpages

4. Referencing
Engineering Innovations

Examples from previous years:

<table>
<thead>
<tr>
<th>Innovation</th>
<th>Keywords / Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dream recorder</td>
<td>Capture lost dreams, especially good ones</td>
</tr>
<tr>
<td>Electricity generation shoe</td>
<td>Emergency charging for mobile devices, light, high efficiency</td>
</tr>
<tr>
<td>Hand free umbrella</td>
<td>Portable design, durable material, light weight</td>
</tr>
<tr>
<td>Ebook reader for the blind</td>
<td>Convert image and chart to sounds</td>
</tr>
</tbody>
</table>
Further Assistance

- Information desk, Library G/F
- lbref@ust.hk
- WhatsApp – 9701-1055

  - Evaluate Information Sources
  - Making Proper Citations (IEEE Style)