Literature Review Activities

Sciences, Technology, Engineering, Mathematics & Geospatial Sciences
Activity 1: Writer’s voice

1. Read the extracts from 2016 theses.
2. In each, identify the writer’s voice, their critical approach.
3. Notice the sentences and linking words that direct the reader towards the research topic.
4. After each activity an answer slide will offer comments.
a. Logistics, Mech. & Computer Engineering

Identify the sentences that indicate the researcher’s voice of authority.

Upstream complexity is caused by some important factors such as supply chain structure, number of nodes and relationships, as well as the different interaction levels between major suppliers. Most publications on upstream manufacturing complexities are related to structural and dynamical issues with specific focus on dyadic interactions between buyers and suppliers (Giunipero and Eltantawy, 2004b). The method of analysis, however, needs to go beyond the traditional buyer-supplier dyad to consider all potential factors. It is important to establish how individual components of the system relate to each other, and how these relationships can determine overall system behaviour and performance (Garbie, 2012). This is essential when assessing the ways in which the upstream side of a supply chain can best cope with an emergent situation.
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Adapted from Hakami, A. Y. 2016
b. Automotive Engineering, Robotics

Identify the sentences that indicate the researcher’s voice of authority.

Despite their desirable properties, the synthesis of clothoids is challenging. There is no closed form expression for clothoids as they are evaluated using Fresnal Integrals. Several methods have been proposed to approximate clothoids such as Bézier curve and B-spline fitting (Wang et al., 2001), arcs (Meek and Walton, 2004), 11th order Béziers (Montes et al., 2008) and 26th order polynomials (McCrae and Singh, 2009). These methods are suitable for CAD applications. The high order polynomials used for approximation methods cannot be evaluated in a suitable manner for real-time robotic applications. To address the real-time use of clothoids in robotics, a basic curve was stored in a look up table and geometric transformations were applied to synthesize the required curves (Brezak and Petrovic, 2014). The length and orientation of the generated Clothoids are limited to minimize the approximation error. This method is, by no means suitable, for real-time dynamic applications and re-planning scenarios.

Source: Elbanhawi, 2016.
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Adapted from Elbanhawi, (2016).
Direct muscular forces are not practically measurable. Experimental studies use the externally recorded joint torque produced during a maximal voluntary contraction as representative of muscle strength. However, antagonistic muscles that oppose the action of the prime mover can significantly contribute to the resultant joint torque measured (Simoneau, Billot et al. 2009). Therefore, their contribution to the external joint torque needs to be considered.

Source: Siddiqi, 2016.
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Source: Siddiqi, 2016, p.19
It is hard to generate truly unbiased samples of networks with fixed degree sequences. Existing random network models that achieve this fall into two categories: the ‘fill methods’ and methods based on Markov chains. Fill methods *construct* a network, starting with just nodes and adding edges one at a time until reaching the desired in-degree and out-degree distribution [112, 84, 95]. These methods are generally fast. However they either produce a biased sample or only rarely produce a network that is not a multigraph [69, 25].
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Adapted from Carstens, 2016, p.38
Activity 2: Citations

1. Look at the referencing styles used in the five extracts above.

2. Can you identify THREE and name them? (get familiar with referencing styles at the Library’s Referencing Guides http://www1.rmit.edu.au/browse;ID=8rwjnkc mfoeez)

   What reference style will you use in your thesis? Why?

3. Look at the citations in the extracts. Are they author-prominent or information-prominent?

4. What generalisation can you make about citation style in these disciplines? Can you explain why?

5. Look at the next slide and explain why the writers have made the unusual decision to use an author-prominent citation.

Answers

Referencing styles
- Harvard  (Jyun 2009) (no comma)
- Endnote  [56, 61]
- APA      (Lyons, 2016) (comma)

Citations
All are information-prominent

Generalisations
These fields tend to use more information-prominent citations because they:
- focus on the ‘facts’ (generalisable and objective, not individual and subjective = ‘positivist’)
- Use not ideas-based thinking, but objects-based thinking
<table>
<thead>
<tr>
<th>Field</th>
<th>Example</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile Tech. Eng.</td>
<td>The first development appeared in the 1960s when Folkman [1] circulated rabbit blood inside a silicone rubber arteriovenous fistula and discovered that if he exposed the tubing to anaesthetic gases on the outside, the rabbits would fall asleep. (Jalvandi, 2016:4)</td>
<td>Seminal/ground-breaking research – first ever (named and honoured)</td>
</tr>
<tr>
<td>Applied Sciences (Biotech)</td>
<td><strong>Figure 1.6:</strong> Activation of cellular and humoral immune responses. The solid arrows indicate immune response activation after a primary infection with influenza virus. The dotted arrows indicate the rapid induction of virus-specific memory cell responses with a secondary influenza virus infection. Figure obtained from van de Sandt et al (2012). (Karkashan, 2016: 35)</td>
<td>Figures often have an author-prominent citation (original design by the researcher)</td>
</tr>
<tr>
<td>Applied Sciences</td>
<td>According to the investigation conducted by Battistoni et al. [48], mercury atoms were found to diffuse through 5 - 6 nm sub-layer of a thin gold film after only 30 minutes exposure to Hg0 at low μg/m3 (low ppbv) range concentrations. Later studies also indicated that the diffusion of mercury molecules can be even deeper into the Au when higher Hg0 vapour concentrations and longer Hg exposure times are used [41, 52]. (Kabir, 2016: 19)</td>
<td>Original research of relevance to Kabir’s research for the thesis.</td>
</tr>
<tr>
<td>Maths &amp; Geospatial Sci.</td>
<td>According to El-Rabbany (2006), GPS-determined ellipsoidal heights are affected by several types of errors such as: a. GPS ephemeris error... (Pinon, 2016:20)</td>
<td>Pinon will attempt to correct these errors</td>
</tr>
</tbody>
</table>
This example comes from applied sciences. The final citation is a weak form of author prominence. It is another reason why information-prominent citations are more likely in applied scientific fields. Can you explain?

An extensive library of benzo[\textit{b}][1,4] dioxepin-3-one analogues were synthesised and evaluated by researchers at Firmenich, Switzerland.\footnote{Plummer, 2016}

\textbf{Answer}
Research is conducted under contract to a registered company, so individual researchers are not named. The writer must use a weak author-prominent citation.
Activity 3: Passive voice

In science writing the research object or action is usually the subject of the sentence (to emphasise the factual nature of the work). The researcher ‘disappears’.

Scientists **evaluate** clothoids using Fresnal integrals.

Convert these sentences so that the object of study becomes the subject (at the front).

1. Brezak and Petrovic (2014) applied geometric transformations in order to synthesize the required curves.

   Geometric transformations were applied in order to synthesize the required curves (Brezak and Petrovic, 2014).

2. Important factors such as supply chain structure, number of nodes and relationships, and the different levels of interaction between major suppliers are some of the causes of upstream complexity.

   Upstream complexity is caused by some important factors such as supply chain structure, number of nodes and relationships, as well as the different levels of interaction between major suppliers.
Despite their desirable properties, the synthesis of clothoids is challenging. There is no closed form expression for clothoids as they are evaluated using Fresnal Integrals. Several methods have been proposed to approximate clothoids such as Bézier curve and B-spline fitting (Wang et al., 2001), arcs (Meek and Walton, 2004), 11th order Béziers (Montes et al., 2008) and 26th order polynomials (McCrae and Singh, 2009). These methods are suitable for CAD applications. The high order polynomials used for approximation methods cannot be evaluated in a suitable manner for real-time robotic applications. To address the real-time use of clothoids in robotics, a basic curve was stored in a look up table and geometric transformations were applied to synthesize the required curves (Brezak and Petrovic, 2014). The length and orientation of the generated Clothoids are limited to minimize the approximation error. This method is, however, unsuitable for real-time dynamic applications and re-planning scenarios.

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References


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