Ingenjörsmässigt skrivande

LINA KÖPSÉN, BIBLIOTEKARIE CAMPUS HBG – 2019

Vetenskapliga texter

- Vad är det?
- Varför ska jag läsa dem?
- Hur hittar jag det jag vill ha?
- Var hittar jag dem?
- Hur använder jag dem?

Ställ gärna frågor!

Du får den här presentationen efter föreläsningen.
I slutet av presentationen kommer en länklista.

Vetenskapliga artiklar?

Parametric System Engineering Analysis of Capability-Based Small Satellite Missions

Sunday Cookey Ekpo, *Member, IEEE*

***Abstract*—To achieve appropriate link budget and system engineering analyses of capability-based small satellites missions, an objective assessment and computation of the component-, subsystem-, and system-levels parameters requirements must be carried out. This paper presents the measurement-derived parametric models for the system engineering analysis of communication, meteorology, planetary, and other small satellite programs with recourse to the initial mission, conceptual design, and postmission objectives. Mass and power margins are the critical resources under investigation besides the link contingencies and operational times. The case study spacecraft systems engineering analyses indicate a transmit power for data transmission uplink and downlink of at least 33 dBm for the generic communication, meteorology, and planetary missions applications. The presented parametric models also reveal a signal-to-noise ratio of at least 16 dB per radio communication link for worst case noise floor and path loss. For a 30-W power utilization, a two-power communication-overpower mode mission operates for an extra 8.3 min compared with a three-power payload-overpower mode mission. This holds a great promise for the development of adaptive subsystems for reconfigurable multiband, and multistandard transponders for multipurposes missions and postmission applications.**

***Index Terms*—Adaptive systems, capability engineering, parametric ... satellite communication, system engineering.**

I. Introduction

THE conceptual design of satellites involves several modeling and simulation approaches that span single person calculations to multiple organizations employing complex and advanced interconnected computer models for optimized solutions [1]. The four design approaches that are currently utilized within the space community include back-of-the envelope techniques, single-use, computer-aided models, serial processes, and integrated concurrent engineering [1]–[4]. These techniques can be combined to meet the customer's needs or a hybrid of several design methods may be implemented. Whatever the adopted design approach, a single solution or specific mission design interests may be the focus ranging from the project manager's background, corporate culture, team leadership, cultural differences, and dynamics also determine the choice of a conceptual design approach for a spacecraft mission.

The fundamental motivations for the capability-based space satellites (CSSs) (such as a highly adaptive small satellite (HASS) [1]) concept include, but are not limited to, in-orbit adaptability, reliability, multifunctionality, enhanced portability, system-level simulation of spacecraft, reduced manufacturing and integration complexities, cost-effectiveness, safety, low carbon footprint, postmission re-application, and flexibility in deployments. A HASS is a reconfigurable, multifunctional, and adaptive small space satellite that has capabilities for dynamic space applications and operations while retaining its designed optimal performance. This capability-based space system design paradigm will gain increasing and expanding applications in the future deployments of constellations of small satellites [1]–[6]. A HASS system architecture has an in-built redundancy and radiation shield for onboard semiconductor components that can be re-engineered while in orbit. The adaptive multifunctional architecture does not follow a subsystem-oriented design approach; it embraces the small satellites scaling techniques [2], [7]. The design process accomplishes functions and eliminates conventional subsystem boundaries. It focuses on the identification and specification of subsystem-level functional requirements. In this approach, the functions of several subsystems are implemented on a single circuit card [6].

Moreover, a capability-based satellite system is developed as a network of functions with reconfigurable intra- and inter-subsystem and module links. This eliminates a single point of failure, enhances a deterministic operation, and/or helps to sustain a real-time performance. The functionality of a module and/or subsystem can be seamlessly transferred to another module and/or subsystem via the adaptable point-to-point network of

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Perspectives on the Gap Between the Software Industry and the Software Engineering Education

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ABSTRACT The gap between the software industry and software engineering education was first mentioned ... three decades ago, in 1989. Since then, its existence has been regularly reported on and solutions to close ... have been proposed. However, after thirty years this gap resists all efforts for closure. In this study we assert that the gap between industry and academia exists for several reasons that are related and intertwined. To take a broader look at the problem from the perspective of all related entities, we (i) provide a detailed overview of the profession and identify the entities, (ii) extract the causes that stem from these entities and discuss what each entity should do, (iii) report and analyze the results of a questionnaire that has been conducted with students and recent graduates, (iv) emphasize the highlights of the interviews conducted with students, recent graduates and academics, (v) and compile a list of skills that are sought by the industry by analyzing the software engineering job advertisements. We further contribute to finding solutions by considering all entities involved, which provides an opportunity to access all of them, so that each can find out what they can do to acknowledge and narrow the gap. Our study concludes that the gap requires constant attention and hard work for all of the entities involved, and therefore all should be on the lookout for new technologies, learn to embrace the changes and adapt to them, so that the gap is kept at a minimum.

INDEX TERMS Software engineering education, education gap, engineering curriculum.

I. INTRODUCTION

Software engineering is a challenging profession in many aspects. The foremost challenge stems from the nature of the software itself. Compared to other engineering disciplines, the software product is not tangible and does not obey any physical laws which makes it rely on good practice rather than a fundamental theory [1]. This abstract nature also affects its design, since as the size of software increases, so does its design complexity, which puts a strain on the shoulders

they notice that real life projects are of ... from the ones they have handled during t... This situation creates the famous gap betw... software engineering education. In a very b... define the gap as the differences between s... ing education and the software industry ... in the associated entities. The industry e... graduates [6], while the students emphasiz... experiences in industry have been rather d...

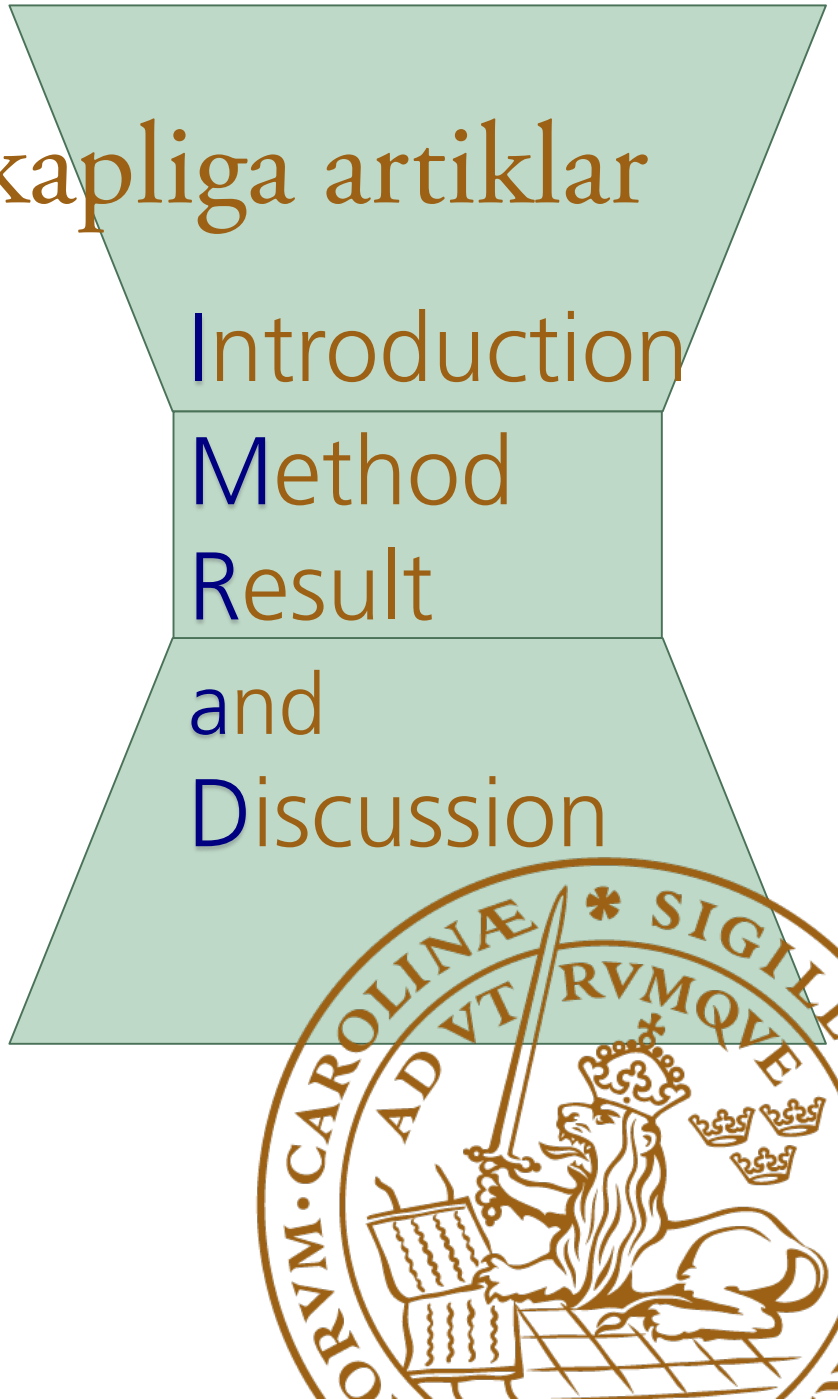
Kännetecken vetenskapliga artiklar

Förutsättningar för vetenskapliga texter:

- Abstract
- Introduktion
- Syfte och teori
- Metod
- Resultat och slutdiskussion
- Referenser, noter och citat
- Information om författaren
- Granskat av sakkunniga

OBS: Rubriker och stycken kan vara tydliga, men behöver inte vara det – läs och värdera!

Om du vill veta mer https://youtu.be/-Zud3lIXxdM



Peer review-processen:

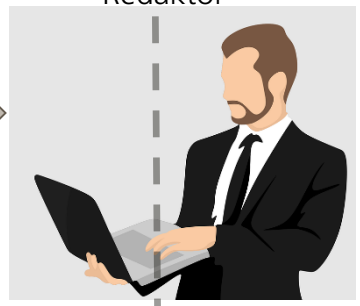
- Förslag på ändringar
- Avslag

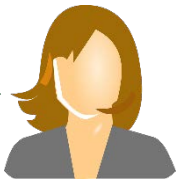
- Förslag på ändringar
- Avslag

Granskare med kompetens inom området

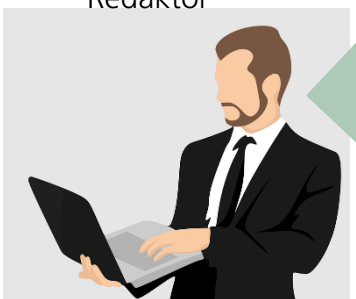
Forskare

Redaktör





Redaktör



Publicerad artikel

https://www.youtube.com/watch?v=rOCQZ7QnoN0

Vad skiljer vetenskaplig artikel från populärvetenskaplig artikel?

Vetenskaplig text

- Syftar till forskningsredovisning
- Har en striktare disposition
- Har ett mer specialiserat språk
- Har facktermer
- Har löpande referenser och noter
- Har en referenslista
- Vänder sig till fackfolk
- Är granskad

Populärvetenskaplig text

- Syftar till information och underhållning
- Har ett lättförståeligt språk
- Har få facktermer, i så fall alltid förklarade
- Har få eller inga referenser
- Har ingen eller mycket kort referenslista
- Vänder sig till allmänheten

https://libguides.lub.lu.se/datateknik_elektroteknik/sokaochutvardera

Varför artiklar?

- Där det **senaste** publiceras
- Den **viktigaste** kommunikationsformen för vetenskaplig information
- Forskare använder ofta artiklar sin egen forskning
- Viktigt för forskare att publicera artiklar

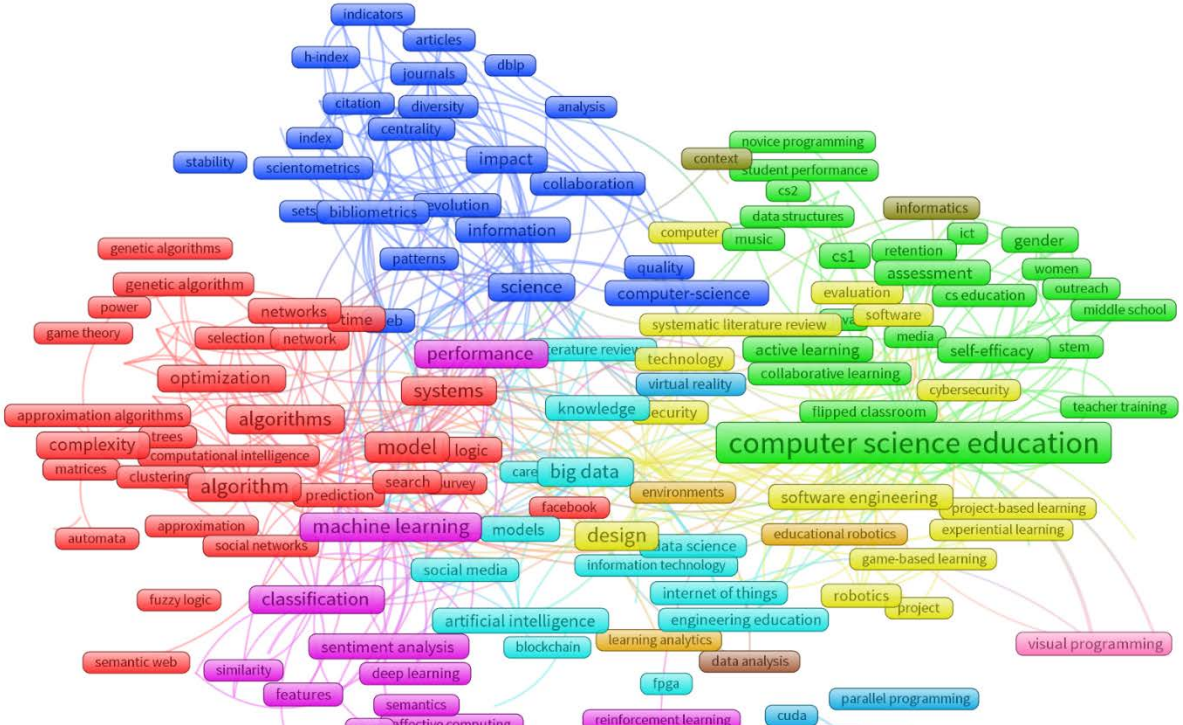
Finns även rapporter, avhandlingar, böcker m.m.

Sökstrategi

- Analysera din uppgift; vad är det du behöver?
  - Börja brett och begränsa sökningen
  - Eller utgå från referenserna i material du har tyckt var relevant
- Anteckna dina sökord

Välja sökord

- Lista intressanta ord (nyckelord)
- Hitta synonymer och närliggande ord
- Översätt till engelska om du använt svenska ord
- Använd ord från din litteratur



Boolska operatorer

https://www.youtube.com/watch?v=LTJygQwYV84&list=WL&index=7

- **AND OR**
  - electronic OR engineering = antingen electronic, engineering eller electronic och engineering
  - electronic AND engineering = Artikeln måste ha både electronic och engineering
- **Trunkering ***
  - Swed* = swedish, sweden, swedens osv
- **Fras " "**
  - "computer science" – orden måste hänga ihop, bra för begrepp.
- **Parenteser ()**
  - Computer (technology OR science) = computer technology eller computer science

Var hittar jag artiklarna?

http://www.ch.lu.se/bibliotek/soeka/aemnesguider/

Material i LUBsearch

ca 201 064 800 vetenskapliga **tidskriftsartiklar**

+ 9 802 000 **tryckta böcker**

+ 1 748 100 **eböcker**

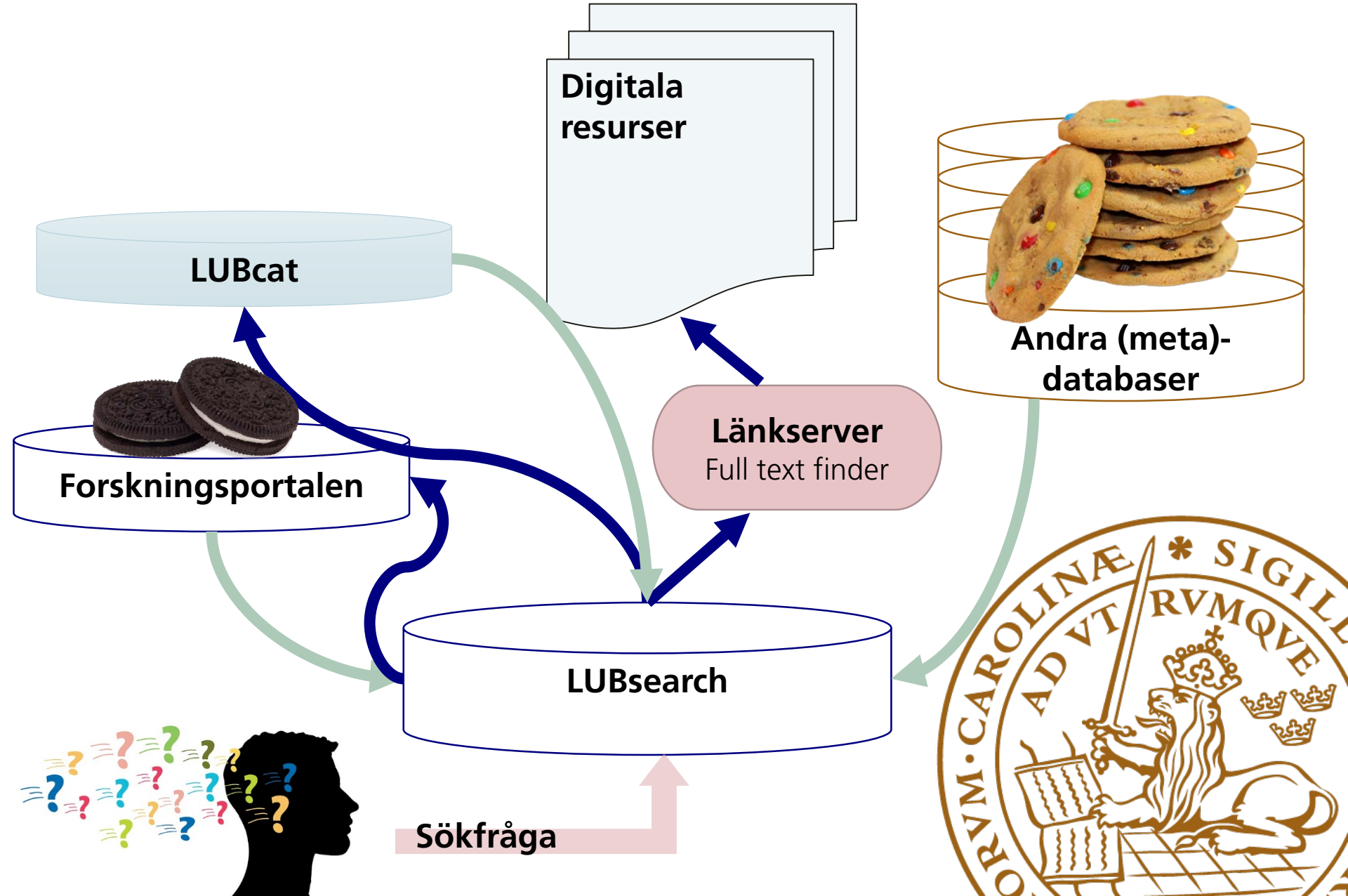
+ konferensrapporter, tidnings- och magasinartiklar

=

310 728 105 poster med fulltext

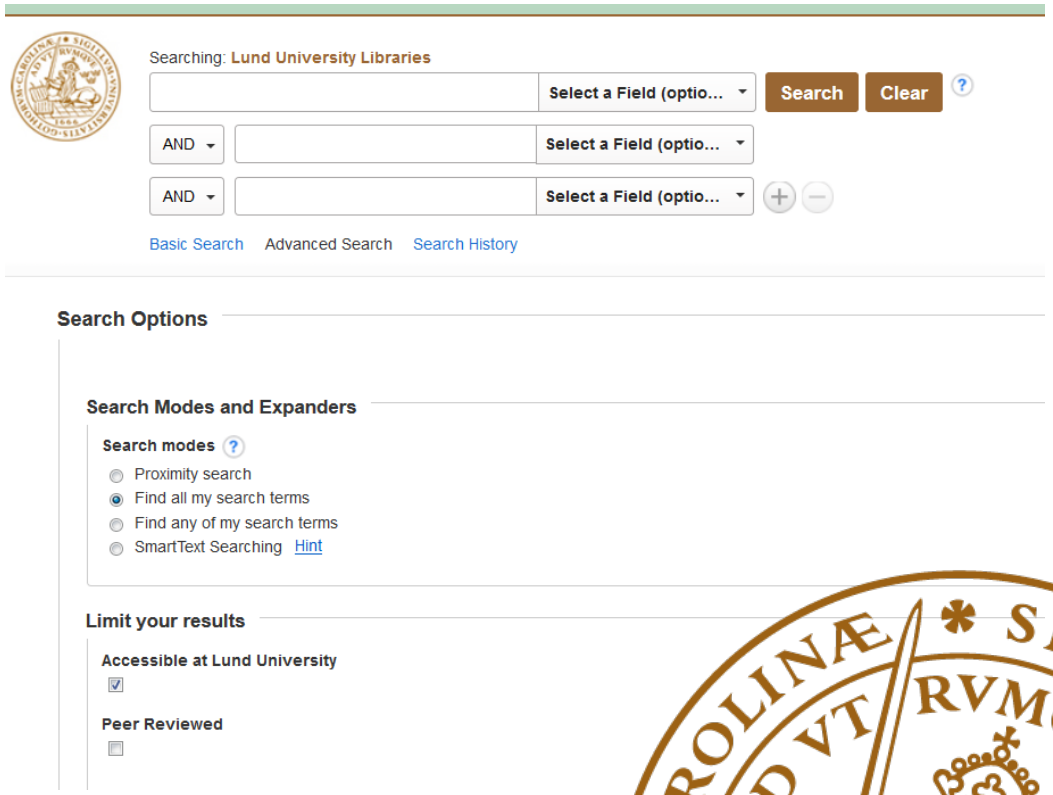
(2019-09-25)

Typ så funkar LUBsearch:



Tekniker

- Avancerad sök
- Ett fält / aspekt



Avgränsningar i LUBsearch

Peer reviewed

Material types

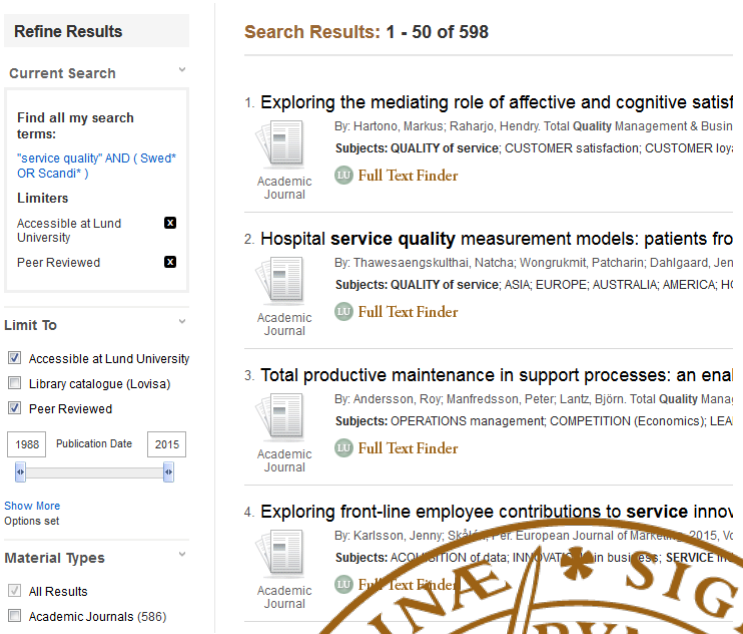
Subjects

År

Språk

Länkar till fulltext – Full text finder

Source database



Undersök posterna i LUBserach

Involving user perspective in a software risk management process.

Authors: Lindholm, Christin[1]

Source: Journal of Software: Evolution & Process. Dec2015, Vol. 27 Issue 12, p953-975. 23p.

Document Type: Article

Subject Terms:
*COMPUTER software reusability
*MEDICAL equipment
*MANAGEMENT information systems
*USE cases (Systems engineering)
*MOBILE apps

Author-Supplied Keywords:
medical device development
risk management
software development
usability testing
user perspective

LUBsearch

- Bra på att *filtrera* fram peer-reviewed
- Går att göra väldigt *preciserade sökningar*
- Enkelt att *begränsa* sökningen
- Tidskrifter läggs in på *artikelnivå* (gör det svårt att förstå att artiklarna kommer från en tidskrift).

LUBsearch
Lund University Libraries

Google (Scholar)

- Mer material, kräver ännu mer källkritik och ämneskoll, inte lika kontrollerat
- Ser ut som Google
- Ser citeringar
- Inte allt i fulltext, mer i fulltext om du sitter på skolan eller loggat in via LU

”Många gånger är det de högsta träffarna i en Google-sökning som anses vara ”bäst”. Det har gjorts studier som visar att bara tre procent av användarna går vidare till sidan två när de har gjort en sökning.”

https://www.retriever.se/stora-brister-kallkritik-enligt-forskare/

Källkritik

https://www.ifla.org/files/assets/hq/topics/info-society/images/how_to_spot_fake_news_-_swedish.pdf

Hur använder jag dem?

Abstract: Purpose – This paper aims to study front-line employees' contribution to service innovation, when they contribute and how they are involved in service innovation. Design/methodology/approach – The paper draws on a multiple-case study on service innovation in four organizations with extensive front-line employee involvement. The main data collection methods are interviews and observations. Findings – The paper suggests that front-line employees contribute customer knowledge, product knowledge and practice knowledge during five phases of the service innovation process – project formation, idea generation, service design, testing and implementation – and that front-line employee involvement ranges from active to passive. Research limitations/implications – Statistical generalization of the results is needed. Practical implications – The paper reveals that early and active front-line employee involvement in the service innovation process creates conditions for a positive contribution to service innovation. Originality/value – The paper suggests that early and active knowledge contributions by front-line employees to the service innovation process are associated with the creation of attractive value propositions. [ABSTRACT FROM AUTHOR]

Ofta samma upplägg som i en artikel vilket gör den lätt att skumma

https://www.youtube.com/watch?v=-3OU0x_MxLc&index=3&list=WL

Referera – varför

”Syftet med att referera är att visa upphovet till en källa och att läsaren ska kunna hitta denna källa”
(Röda Korset 2014, s. 1)

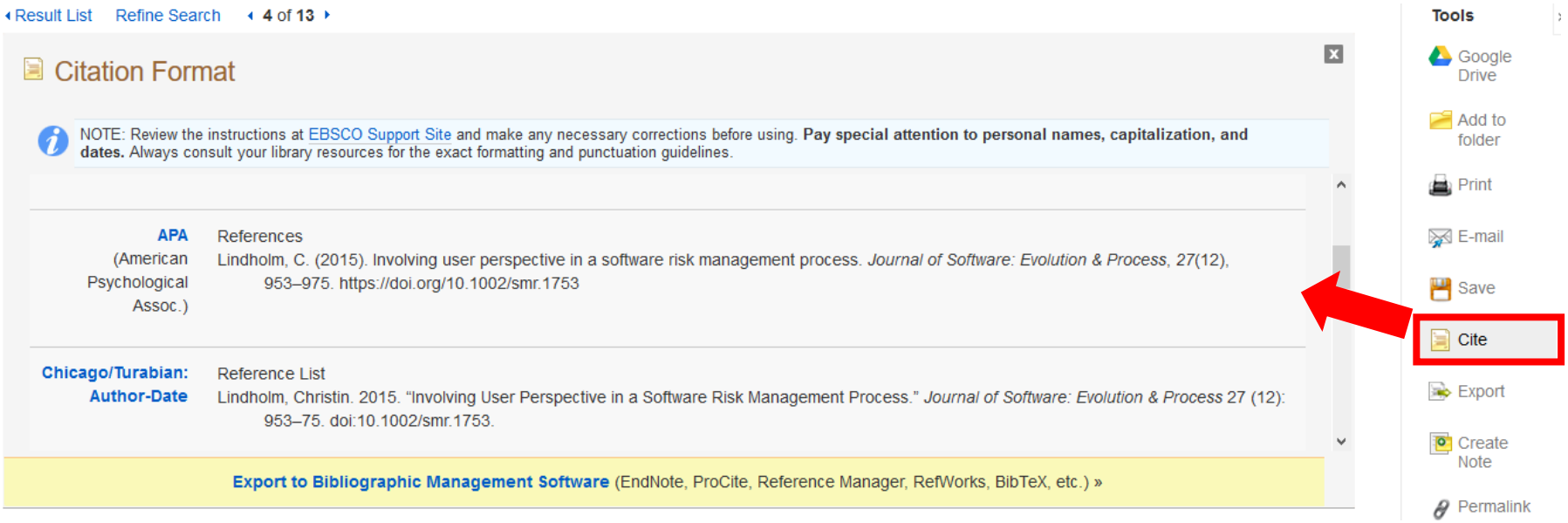
- Del i akademiskt sammanhang
- Ära den som äras bör
- Visa att du är insatt i ämnet
- Bedöma trovärdighet
- Följa resonemang
- Verifiera källor
- Undvika plagiering
- Vad är dina slutsatser och vad är hämtat från andra?

Röda Korset (2014). *Guide till referenshantering*: *Svensk tolkning av APA systemet för Röda Korsets Högskola*. Stockholm: Röda Korsets Högskola.
https://www.sh.se/download/18.7d9f1b25167c61c5af38f695/1551022923629/APA_referenser_2015.pdf

Referera – hur?

- Testa klipp-och-klistra-funktionen i LUBsearch
- Noggrannhet och enhetlighet
- Hellre en gång för mycket

https://www.hb.se/Biblioteket/Skriva-och-referera/Referera-till-kallor/Guide-till-Harvardsystemet/



Från teori till praktik

Listorna med tänkbara artiklar hittar ni på kurssidan: https://www.eit.lth.se/index.php?ciuid=1253&coursepage=9068

- Visa för mig vilka artiklar du har sökt fram
- Skriv ner vilken artikel du väljer på min lista

Kontakta gärna mig eller mina kollegor på biblioteket

Lina Köpsén: lina.kopsen@ch.lu.se (går både att maila och chatta på Hangouts) eller 042-35 65 23

Biblioteket: bibliotek@ch.lu.se eller 042-35 65 80

Länklista

- Libguiden för Data- och elektroteknik högskoleingenjörer, här hittar du de tjänster jag pratat om http://libguides.lub.lu.se/datateknik_elektroteknik
- Libguide om Lubsearch och elektroniska resurser http://libguides.lub.lu.se/lubsearchandelectronicresources
- Källkritik på internet https://www.iis.se/docs/Kallkritik-pa-Internet.pdf
- Bilder hämtade från LU:s bildbank eller https://pixabay.com/

Tips

- Jag får för många träffar
  - Lägg till fler sökord och gärna mer specifika sökord. Använd avgränsare.
- Jag får inga relevanta träffar
  - Försök hitta nya sökord.
- Jag vill enbart ha artiklar från vetenskapliga tidskrifter
  - Begränsa din sökning till ”peer-reviewed” i LUBsearch eller EBSCO-databaser.
- Jag har hittat en intressant och relevant artikel
  - Använd referenslistan och hitta annat intressant material.