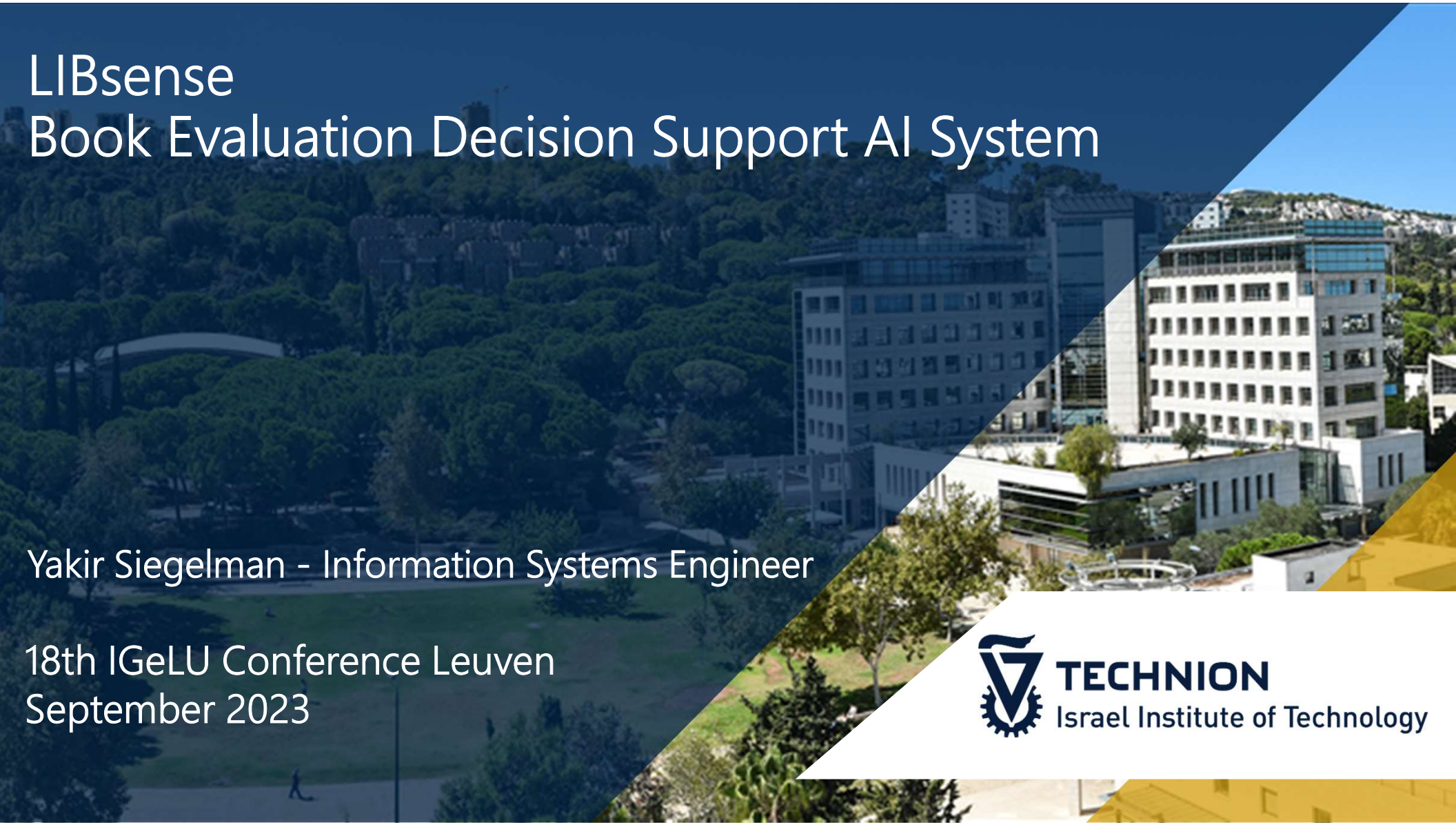
LIBsense
Book Evaluation Decision Support AI System



Yakir Siegelman - Information Systems Engineer

18th IGeLU Conference Leuven
September 2023

TECHNION
Israel Institute of Technology

How it all started?

- Last year’s conference - Cardiff
- Everyone was talking about AI

Agenda

1. About me & the Technion
2. The challenge
3. LIBcap – the older version
4. LIBsense – what is it?
5. The flow & screens
6. Technical overview
7. What's next?

Technion Libraries

- Technion - Israel Institute of Technology Located in Haifa, Israel
- 15 Libraries in the Technion:
  - 1 Central Library
  - 14 Faculty Libraries

TECHNION LIBRARIES

Information Systems Team of Six

Guy Shahaf

Head of Information Systems

Efrat Alagem Tehar Lev

Information Systems Engineer

Sigal Leibovitz

Information Systems Engineer

Yakir Siegelman

Information Systems Engineer

Nimrod Haller

Information Accessibility Coordinator

Amir Sackran

IT Infrastructure Manager

The challenge

- Receiving a lot of books
- Systematic removal of books
- Manual process of decision
- Only 1 specialist librarian

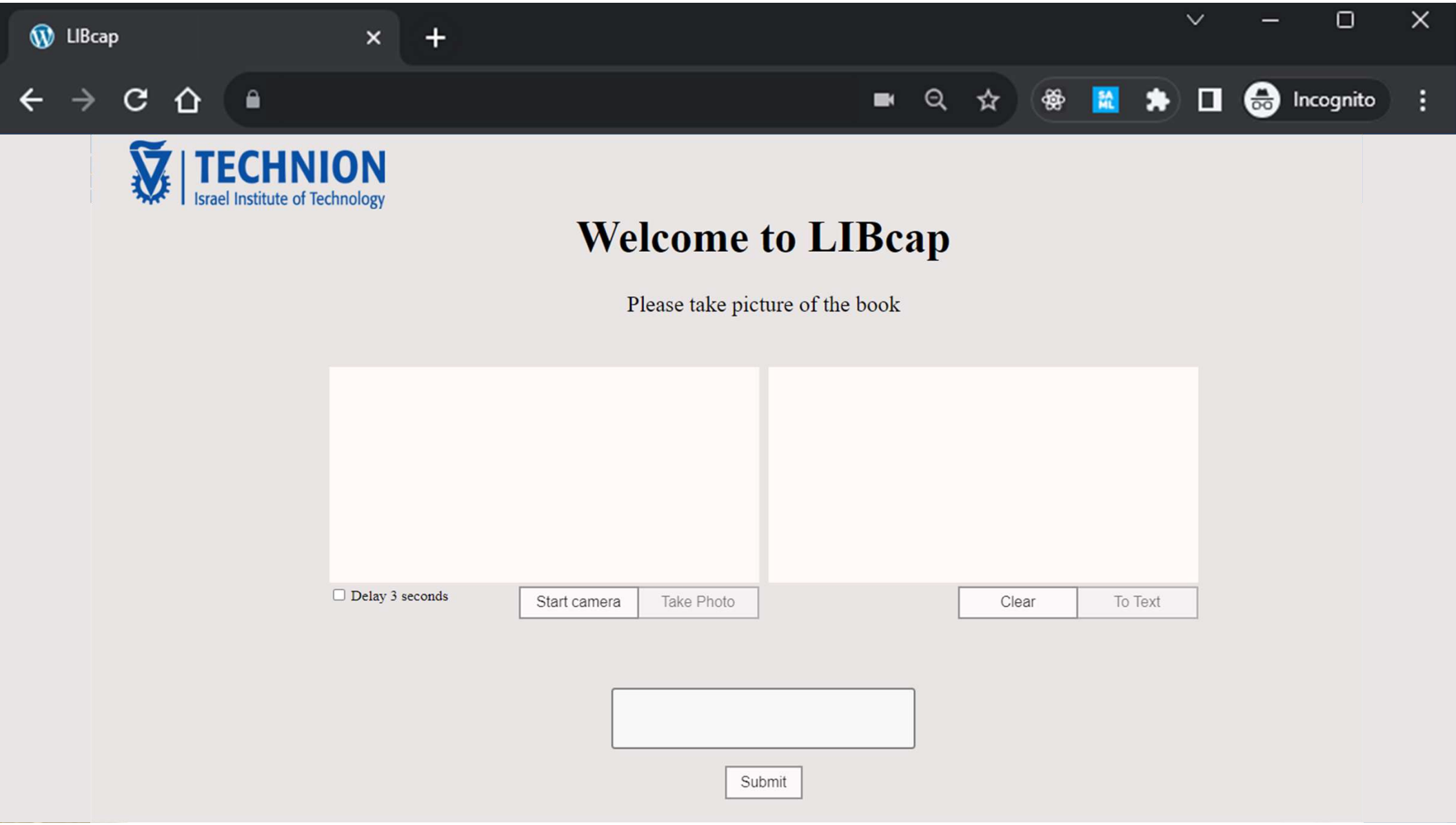
The challenge

- Emotional Bias
- Aligning with complex procedure

LIBcap - the older version

- Support OCR (Optical character recognition)
- Search in Primo
- Not using machine learning

TECHNION LIBRARIES


LIBcap
Incognito
TECHNION
Israel Institute of Technology
Welcome to LIBcap
Please take picture of the book
Delay 3 seconds
Start camera
Take Photo
Clear
To Text
Submit

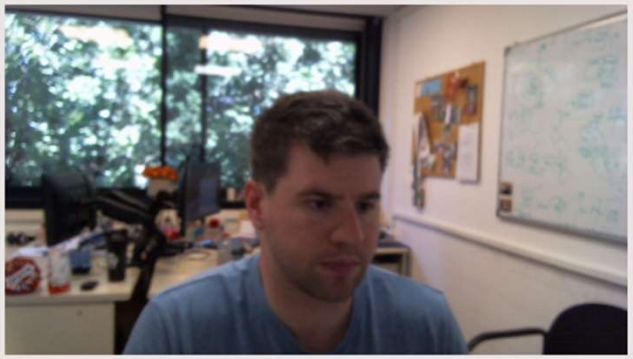
LIBcap

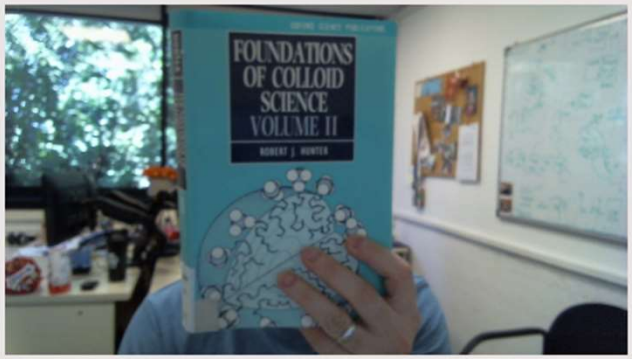
Incognito

TECHNION
Israel Institute of Technology

Welcome to LIBcap

Please take picture of the book





Delay 3 seconds

Stop camera | Retake Photo

Clear | To Text

FOUNDATIONS OF COLLOID SCIENCE

Submit

Ex Libris Discovery - FOUNDATIO

Incognito

הטכניון ספריות הטכניון

NEW SEARCH | ARTICLES & MORE | GOOGLE SCHOLAR | JOURNAL SEARCH | DATABASE SEARCH | COLLECTIONS | ... | My Library | Menu

FOUNDATIONS OF COLLOID SCIENCE

Library Catalog

ADVANCED SEARCH

Sign in to get complete results and to request items | My Library | DISMISS

Tweak your results

Sort by Relevance

Availability

Available Online

Physical Items

Resource Type

Creation Date

Where in the Libraries

Author/Creator/Supervisor

Subject

Language

0 selected | 1-7 of 7 Results

1

MULTIPLE VERSIONS

Foundations of colloid science / Robert J. Hunter ; written in collaboration with Lee R. White ... [et al.].

Hunter, Robert J.; White, Lee R.

2 versions found. See all versions

2

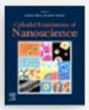
BOOK

Colloidal foundations of nanoscience / edited by Debora Berti, Gerardo Palazzo.

2014

Available Online

3



BOOK

Colloidal foundations of nanoscience / edited by Debora Berti, Gerardo Palazzo.

2022; Second edition.

Available Online

LIBsense – what is it?

Web application

- HTML
- CSS
- JS
- PHP
- MySQL

LIBsense – the flow

TECHNION LIBRARIES

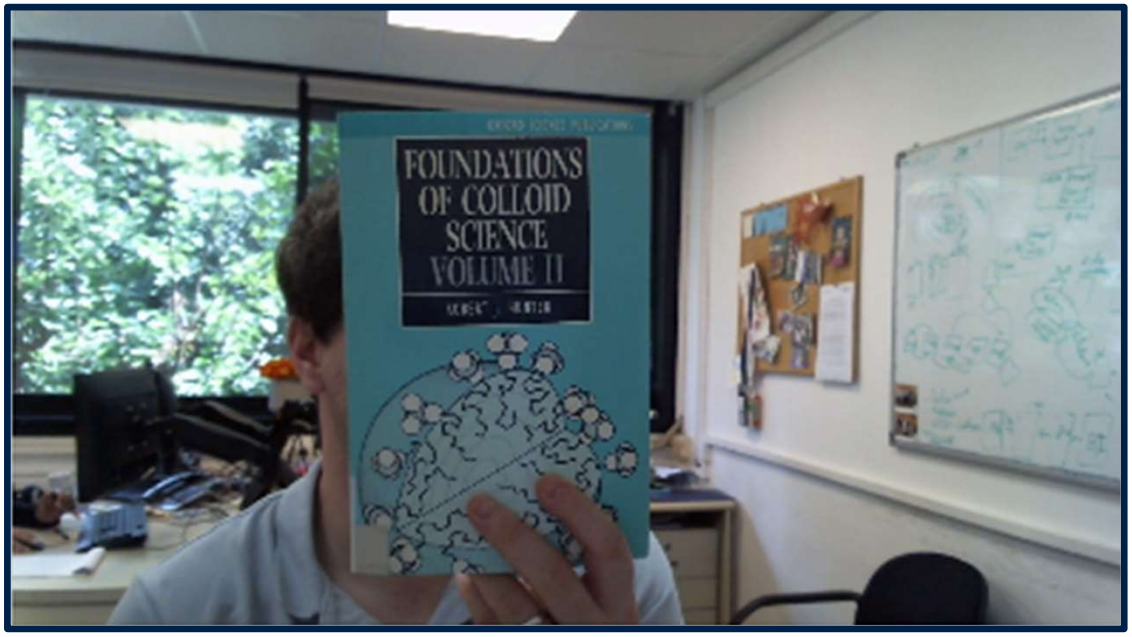
LIBsense

Incognito

TECHNION LIBRARIES

LIBsense

1 Step 1 — 2 Step 2 — 3 Step 3



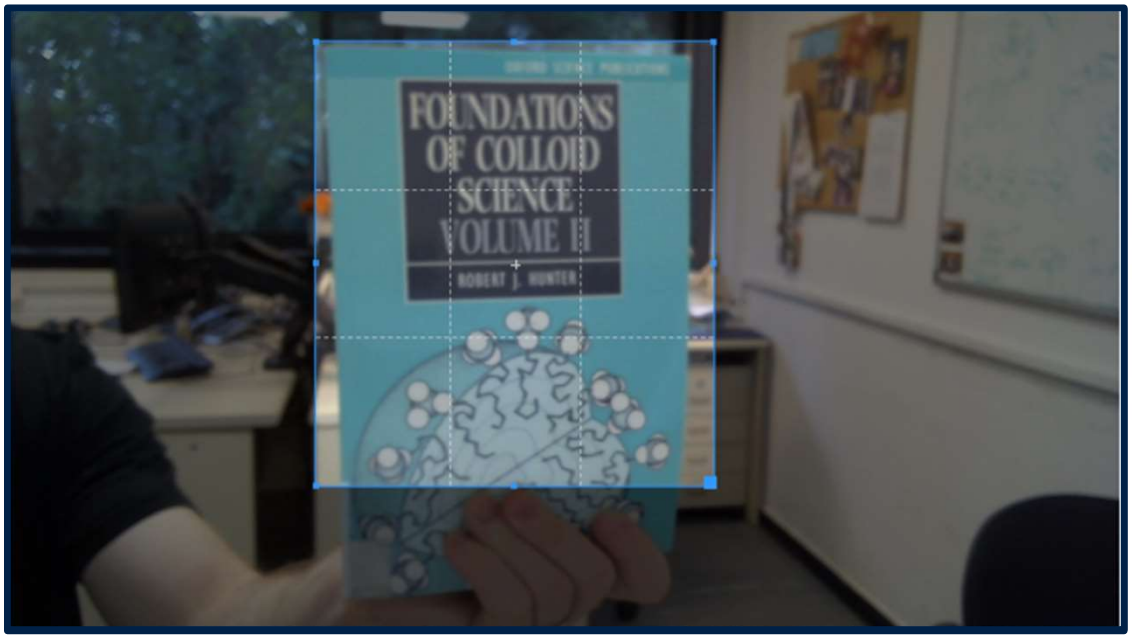
LIBsense

Incognito

TECHNION LIBRARIES

LIBsense

1 Step 1 — 2 Step 2 — 3 Step 3



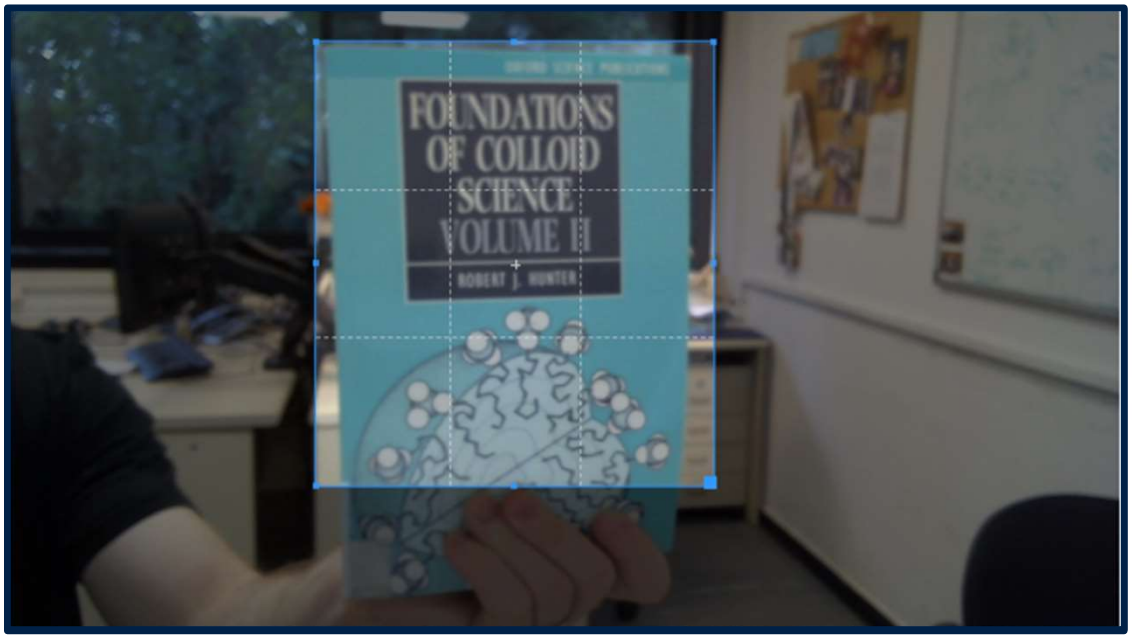
LIBsense

Incognito

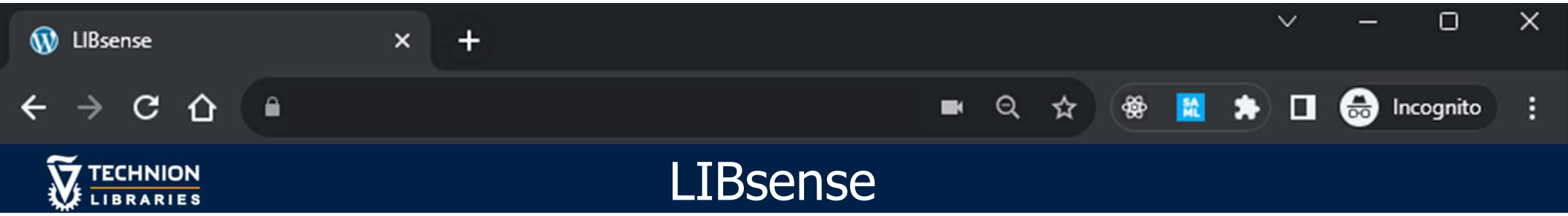
TECHNION LIBRARIES

LIBsense

1 Step 1 — 2 Step 2 — 3 Step 3



FOUNDATIONS OF COLLOID SCIENCE VOLUME II ROBERT J. HUNTER

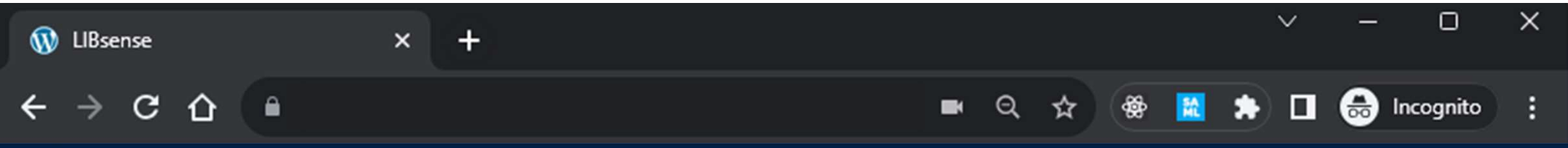


TECHNION LIBRARIES

LIBsense

Step 1 — 2 Step 2 — 3 Step 3

Title	Subject	Creation Date	Publisher	Edition	Version	Select
Foundations of colloid science / Robert J. Hunter.	Colloids	2001	Oxford : Oxford University Press	2nd ed.	2	
Colloidal foundations of nanoscience / edited by Debora Berti, Gerardo Palazzo.	Colloids, Nanotechnology	2014	Amsterdam, Netherlands : Elsevier		1	
Colloidal foundations of nanoscience / edited by Debora Berti, Gerardo Palazzo.	Nanoscience, Colloids	2022	Amsterdam, Netherlands : Elsevier	Second edition.	1	



TECHNION LIBRARIES

LIBsense

Step 1 — 2 Step 2 — 3 Step 3

Title:	FOUNDATIONS OF COLLOID SCIENCE	Number of loans:	2
Author:	ROBERT J. HUNTER	Last Loan Date:	16/03/2022
Subject:	PHYSICAL CHEMISTRY	Publisher:	Oxford : Oxford University Press
Number of items:	3	Publication Date:	2001
Edition:	2nd ed.	Condition:	As new

LIBsense

Incognito

TECHNION LIBRARIES

LIBsense

Step 1 — Step 2 — 3 Step 3

Calculated decision: Keep the book

Confidence level: 85%

Your decision:

 Keep

 Recycle

Technical overview

- Involving 3 technologies:
  - Google Cloud Vision API
  - Ex Libris APIs (Primo, Alma)
  - Azure Machine Learning

Cloud Vision API

ExLibris
Part of Clarivate

Azure Machine Learning

Technical overview

- Extracting the title of the book
  1. Sending the image to Google Cloud Vision API
  2. Receiving the book cover text from Google Vision API
- Google Vision API supports Hebrew

Cloud Vision API

Technical overview

- Extracting more information about the book
  1. Sending the text to Ex Libris API's
  2. Displaying the search results on the screen – Primo API
  3. Receiving the information about the book – Alma API

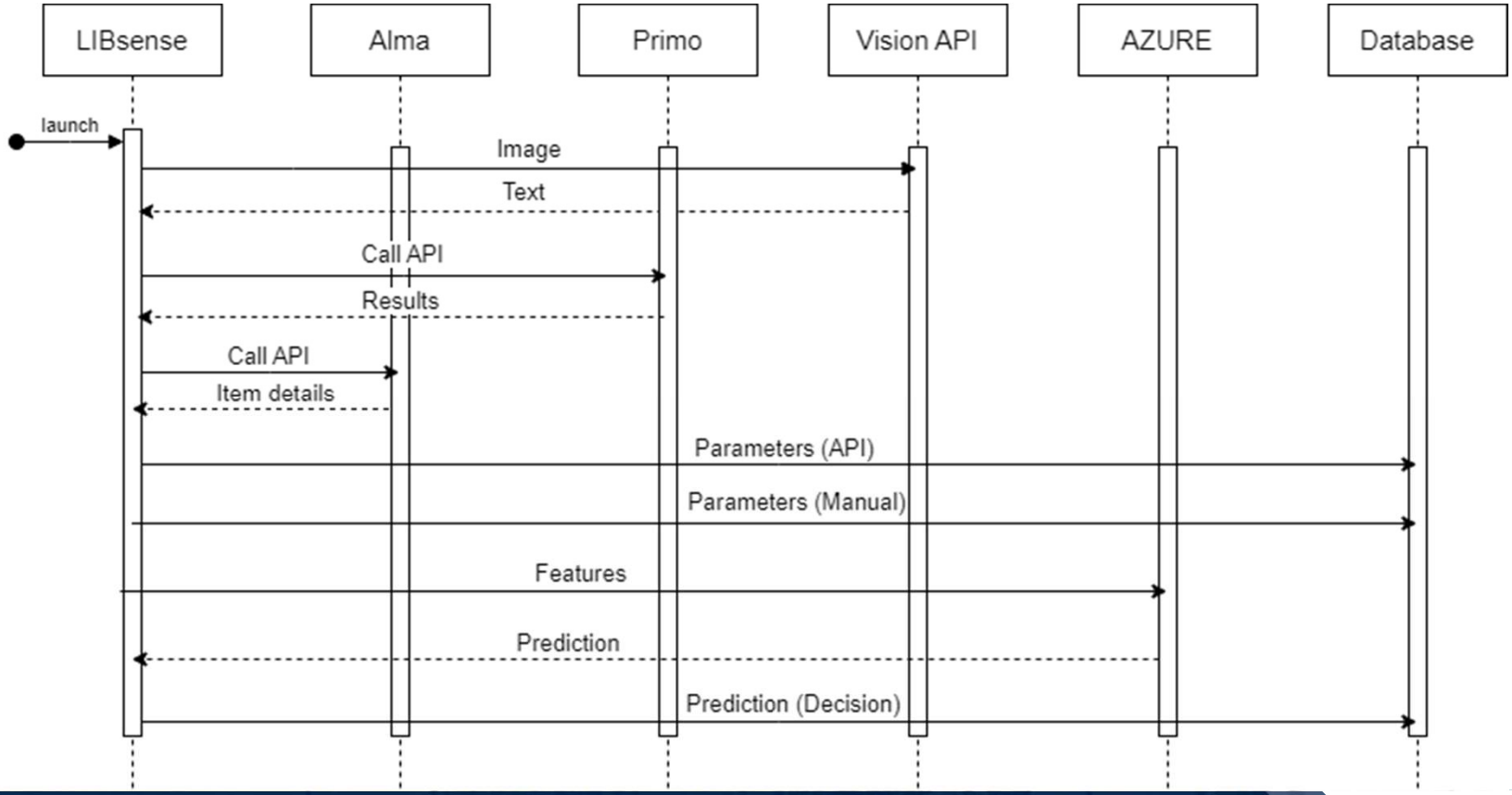
Technical overview

- Using the last pre-trained machine learning model
- Performing prediction with extracted / manually parameters:

1. Title
2. Author
3. Subject
4. Number of items
5. Edition
6. Number of loans
7. Last Loan Date
8. Publisher
9. Publication Date
10. Condition

Azure Machine Learning

Technical overview



TECHNION LIBRARIES

What's next?

- Collecting more data about books
- Consistent improvement of the Model
- More libraries around the world to join
- Collaboration with The National Library of Israel (bigger catalog)

Thank you!
Questions?

Yakir Siegelman - yakirs@technion.ac.il