New AI tools for research work

Brief overview of how AI can help in your research projects.

Abderisak Adam,
Research coordinator Avidnote & Kahubi
PhD in Civ Engineering

Agenda

Brief overview of meeting agenda

- **Brief introduction to the topic**
- **How AI tools can be utilized in the research process**
- **AI research tools: practical examples**
- **Important ethical considerations**
- **Q&A**

About LLMs

Language models (LLM) can converse with humans in natural language.

They are trained on dataset of over 1 billion conversational utterances, allowing it to “understand” and respond to human conversations.

LLMs are able to generate both short and long-form text, and underdo complicated tasks.

Reading

AI can be used to simplify the process of reading academic papers.

Functionalities include:

- simplify texts
- to translate text
- create summaries
- get opposite views
- provide academic critique
- and more

Analysis

AI can be used to interpret or analysis data, assuming the user has domain knowledge of the area.

Functionalities include:

- find correlations
- interpret data
- provide insights
- code interviews
- and more

Methods

AI can be used to explore research different methods.

Functionalities include:

- generate interview questions
- generate survey questions
- suggest relevant research method
- suggest keywords for literature search
- and more

Writing

AI for writing/rewriting and editing.

Functionalities include:

- write text
- rewrite text
- proofread text
- and more

AI tools for researchers

Let us take a look at two online AI tools for researchers

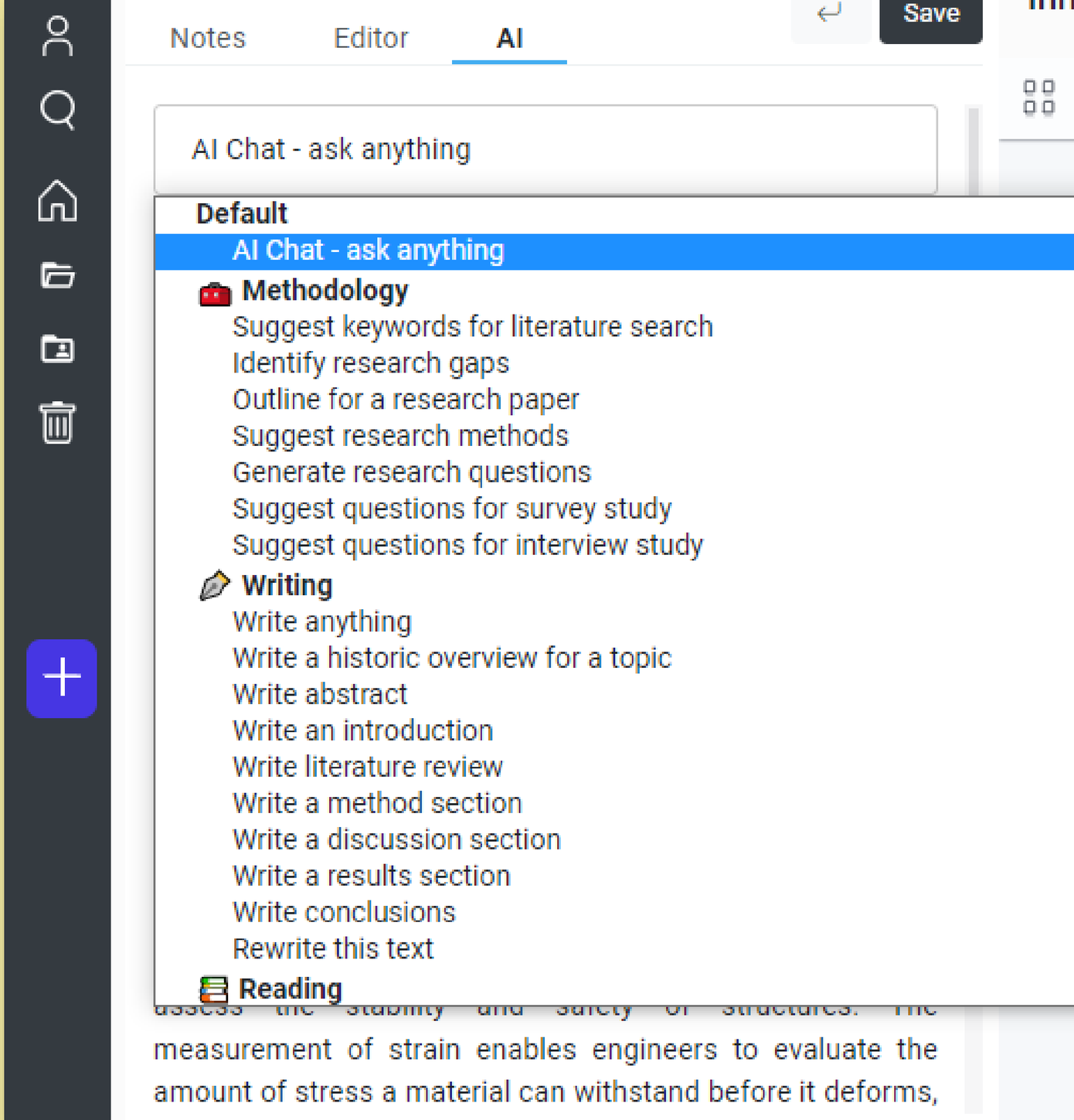
- **Kahubi.com**

- **Avidnote.com**

Avidnote

Note-taking for researchers enhanced by AI.

Enables researchers to write and organize their research.



Avidnote Interface

Tags

Home Save

B I

A neural network is a network or circuit of neurons, or in a modern sense, an artificial neural network, composed of artificial neurons or nodes.[1] Thus a neural network is either a biological neural network, made up of biological neurons, or an artificial neural network, for solving artificial intelligence (AI) problems.

The connections of the biological neuron are modeled as weights. A positive weight reflects an excitatory connection, while negative values mean inhibitory connections. All inputs are modified by a weight and summed. This activity is referred to as a linear combination. Finally, an activation function controls the amplitude of the output. For example, an acceptable range of output is usually between 0 and 1, or it could be −1 and 1.

Here you

Mobilenets: Efficient convolutional neural networks for mobile vision applications

Page 1 of 9

MobileNets: Efficient Convolutional Neural Networks for Mobile Vision Applications

Andrew G. Howard Menglong Zhu Bo Chen Dmitry Kalenichenko
Weijun Wang Tobias Weyand Marco Andreetto Hartwig Adam

Google Inc.
{howarda,menglong,bochen,dkalenichenko,weijunw,weyand,anm,hadam}@google.com

Abstract

We present a class of efficient models called MobileNets for mobile and embedded vision applications. MobileNets are based on a streamlined architecture that uses depthwise separable convolutions to build light weight deep neural networks. We introduce two simple global hyperparameters that efficiently trade off between latency and accuracy. These hyper-parameters allow the model builder to choose the right sized model for their application based on the constraints of the problem. We present extensive experiments on resource and accuracy tradeoffs and show strong performance compared to other popular models on ImageNet classification. We then demonstrate the effectiveness of MobileNets across a wide range of applications and use cases including object detection, finegrain classification, face attributes and large scale geo-localization.

1. Introduction

Convolutional neural networks have become ubiquitous in computer vision ever since AlexNet [19] popularized deep convolutional neural networks by winning the ImageNet Challenge: ILSVRC 2012 [24]. The general trend has been to make deeper and more complicated networks

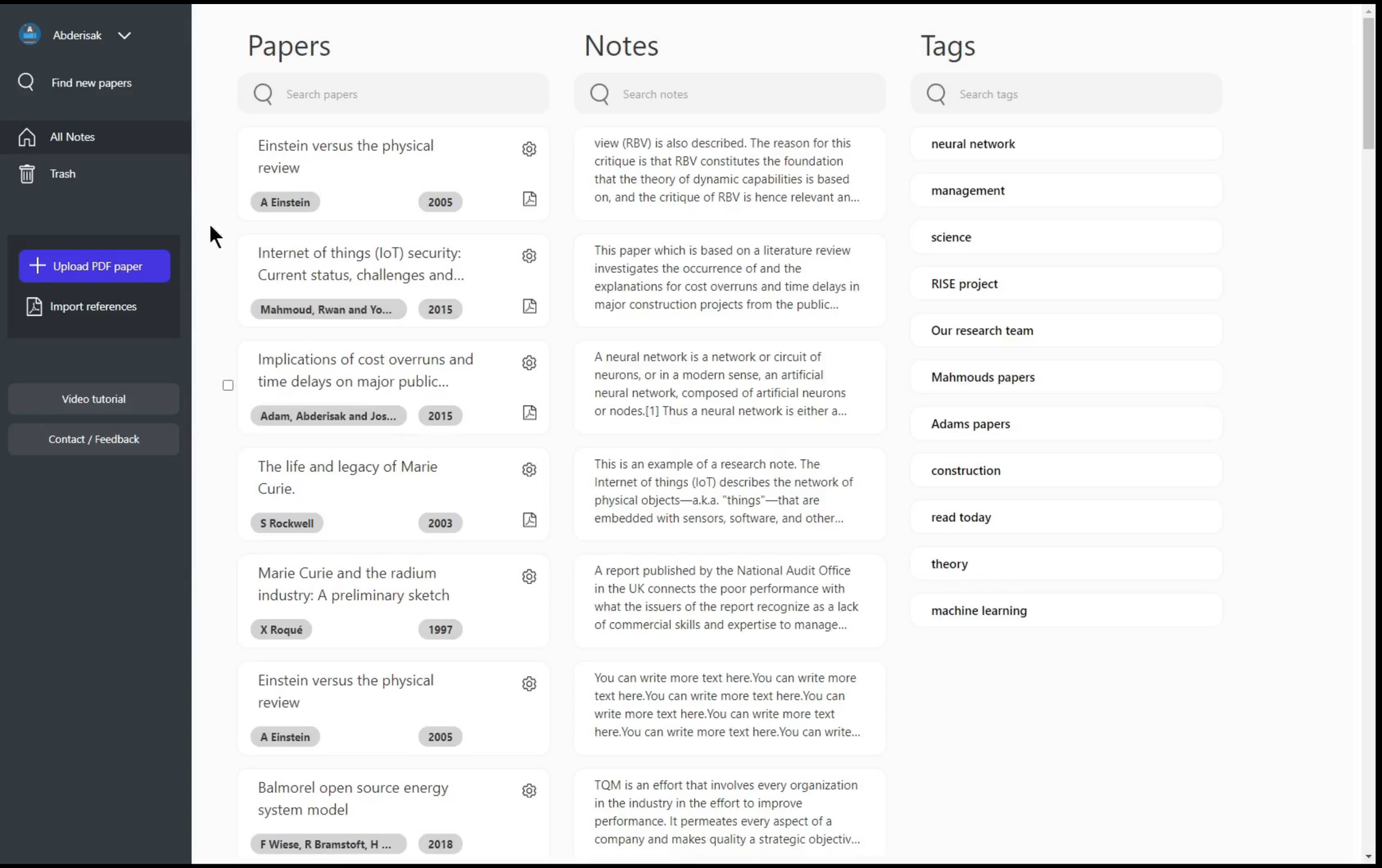
models. Section 3 describes the MobileNet architecture and two hyper-parameters width multiplier and resolution multiplier to define smaller and more efficient MobileNets. Section 4 describes experiments on ImageNet as well a variety of different applications and use cases. Section 5 closes with a summary and conclusion.

2. Prior Work

There has been rising interest in building small and efficient neural networks in the recent literature, e.g. [16, 34, 12, 36, 22]. Many different approaches can be generally categorized into either compressing pretrained networks or training small networks directly. This paper proposes a class of network architectures that allows a model developer to specifically choose a small network that matches the resource restrictions (latency, size) for their application. MobileNets primarily focus on optimizing for latency but also yield small networks. Many papers on small networks focus only on size but do not consider speed.

MobileNets are built primarily from depthwise separable convolutions initially introduced in [26] and subsequently used in Inception models [13] to reduce the computation in the first few layers. Flattened networks [16] build a network out of fully factorized convolutions and showed the potential of extremely factorized networks. Independent of this

Avidnote Overview



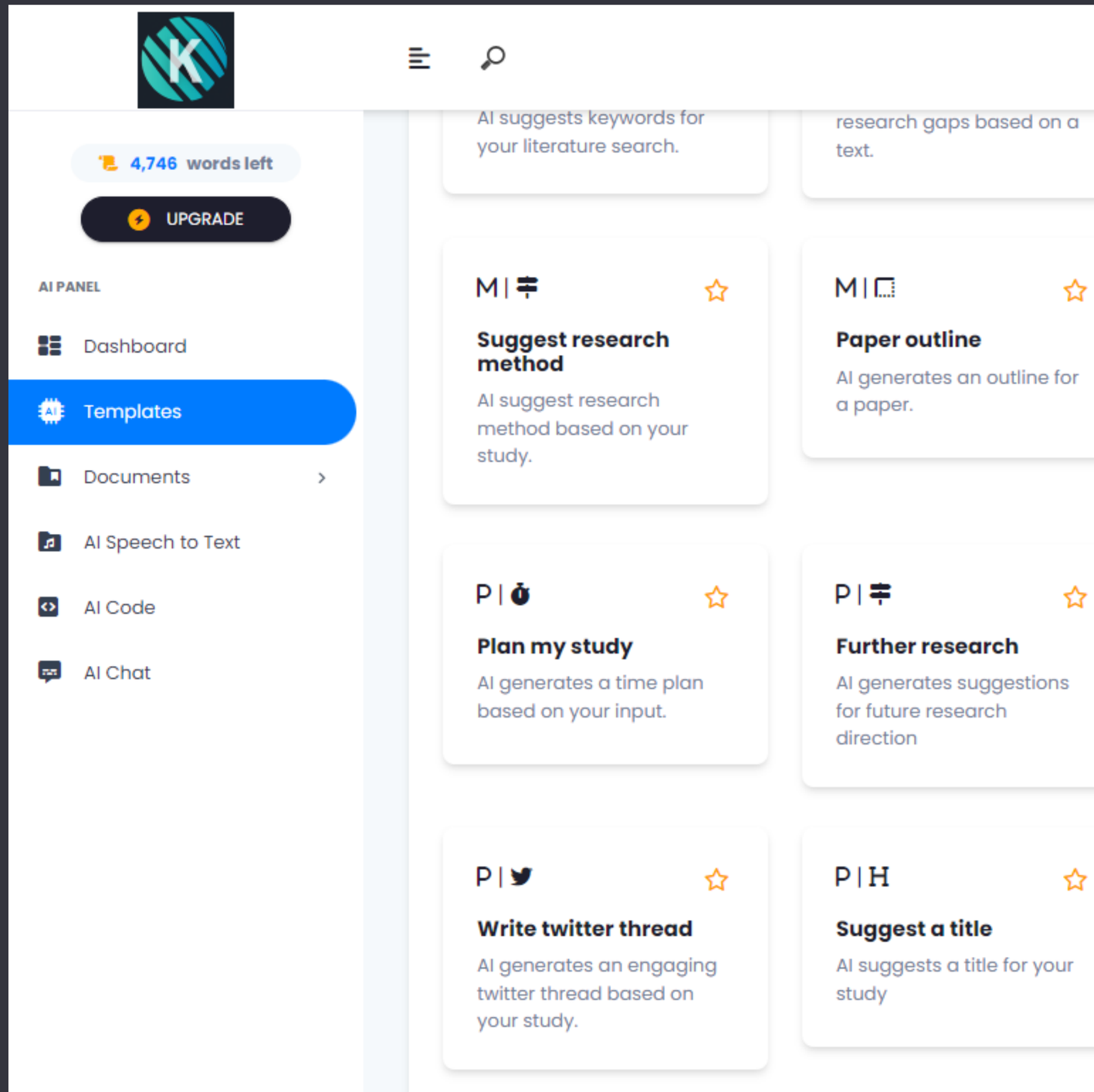
Kahubi

Dedicated AI tool for researchers.

Includes previously mentioned functionalities that relate to:

- writing
- reading
- analyzing

+ automatic transcription
+ more inputs (10 000 words)
+ ai code
+ ai chat



Important considerations

How to look at AI tools

A tool, not a replacement

AI written text cannot be submitted as that of your own. Like all text, you discard, edit, modify and provide references.

Not as Word but as Google

Consider AI as Google, a starting point for research but not like Word.

Don’t trust, and verify.

Automate the mundane, explore the complex

AI can help you automate mundane tasks and explore more complicated issues.

Important considerations

Data related information

Data is private

Your data is private and belongs to you. You can choose to delete all of your data ay any time.

Data stored in GDPR certified servers

We store all the data in EU data centers in compliance with GDPR regulations. We are based in the EU (Sweden).

Data is retrievable

You can retrieve all of your data at any time.

How to get started

Free plans

Register for free at: **avidnote.com**

Free plans are always free

Register for free at: **kahubi.com**

If you need more AI searches, you can upgrade

Visit the websites for premium plans. We offer discounts for groups and for students

Trying out Premium plans

Premium gives you:
- More AI searches
- More storage
- More collaboration
- More functionalities

Introduce Kahubi & Avidnote to your department

1) We give free 30-day premium to your entire department.
2) Contact us for more info.

Questions?

Feel free to ask questions in the chat or reach out through the website.

Contact

adam@avidnote.com