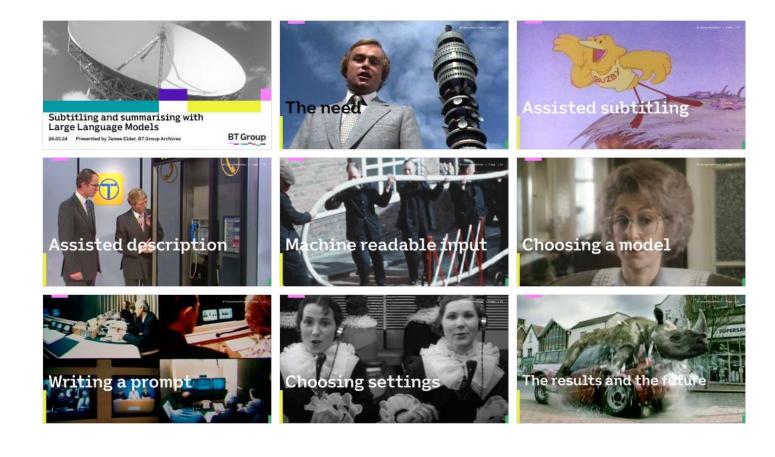
Subtitling and summarising with Large Language Models





Subtitling and summarising with Large Language Models

Presented by James Elder, BT Group Archives



BT Group Archives

BT Group is the world's oldest communications company.

We can trace our roots all the way back to The Electric Telegraph Company.

Our collections are acknowledged by UNESCO and Arts Council England as being internationally significant and an important part of the UK's cultural and scientific heritage.





Our film and video collection

From the GPO Film Unit to Kevin Bacon's EE adverts

- 90 years
- Over 3000 items
- At least 15 physical formats





About All Media Audio Media Video Media Data Media Film Media Media Preservation

1-inch Type C video tape (1976 – mid-1990s)



1-inch Type C video tape was an open reel magnetic tape format for professional analogue video

It was introduced by Ampex and Sony in 1976, and replaced the then standard 2-inch Quadruplex video tape in broadcast use, and the Ampex 1-inch Type A format. In fact, the last Type A machine, the Ampex VPR-1, could be converted to Type C by Ampex and many were.

1-inch Type C is capable of functions such as still, shuttle, and variable-speed playback, including slow motion that 2-inch Quadruplex and 1-inch Type B videotape machines lacked, due to the manner in which they recorded video tracks onto the tape.

Despite being a composite video format like U-matic or VHS, 1-inch Type C has very high video quality, approaching that of component video formats like Betacam. It became a mainstay in television and video production for almost 20 years, before being supplanted by more compact videocassette formats like Betacam, DVCAM, D1, D2 and DVCPro. It was also widely used as the master videotape format for mastering of the first generation of LaserDisc titles released, until being replaced in the late 1980s by

Sources / Resources

Preservation Self-Assessment Program (PSAP) | Videotape 1-inch SMPTE Type C Helical Video Format Type C videotape - Wikipedia, the free encyclopedia

Preservation / Migration

Media Stability Rating



Obsolescence Rating



Similar Media

U-matic (1971 - 1990s)

Sony EV 1-inch open reel video tape (1964 early 1970s)

1-inch Type A video tape (1965 - 1976)

IVC 800 series 1-inch open reel video tape (1967 - late 1980s)

U-matic S SP (1986 - late 1990s)

Media Preservation

Media Identification Tools

Media Stability Ratings

Obsolescence Ratings

Transcription and Digitisation Services When does a format become obsolete?



About BT Group

Investors

News & media

Responsible business Careers Contact us

Home | About BT Group | Our history | Film and photography archive | Search all decades



Search all titles and summaries



3 min call: First London Job

A man in 1935 phones his mother to tell her he has got his first weekly wage packet (one pound and three shillings). A man in 1975 does the same (this time it is £23).

Voiceover: "In 1935 a three minute cheap rate trunk call cost a shilling or 5p. In 1975 a three minute dialled cheap rate trunk call cost 5.5p. Over 40 years that's small change".



3 min call: Grocer

A grocer in 1935 summarises an order over the telephone ("cheese fourpence, bacon one and tuppence..."). A grocer in 1975 does the same ("cheese 32p, bacon 68p...").

Voiceover: "In 1935 a three minute cheap rate call cost a shilling or 5p. In 1975 a three minute dialled cheap rate trunk call cost 5.5p. Over 40 years that's small change".



Extract from beginning of 1987 film '999 Emergency - Which Service Please' containing 1960s footage. Opens with a police car responding to a call through the streets of London. Voice-over provides a narative of the 999 service and it's origins. Clip of a newspaper featuring the first 999 call is shown. Footage shows operators at work before 999 was introduced and emergency services in action during World War 2.



999 - Emergency Which Service Please

This video was made to celebrate the 50th anniversary of the 999 Emergency Service. It details the first 999 call made in London in 1937, which resulted in an arrest in Hampstead. It covers BT's role when a 999 call is made, as well as showing the four emergency services (Police, Fire, Ambulance and Coastguard) in action:

- Search all decades
- 1930s
- 1940s
- 1950s
- 1960s
- 1970s
- 1980s
- 1990s
- 2000s
- 2010s
- Oral histories

BROWSE ARCHIVE

search

ARCHIVE Q

+FILTER

Complete Archive

Sort by Date

The Fairy of

Atlantic link

Post Office

Tower colour

the Phone

Talking Clock

Transatlantic

telephone

cable (US...

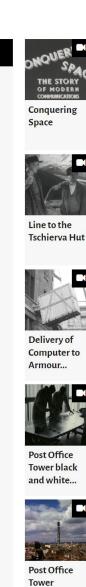
Post Office

Tower

REFINE YOUR SELECTION Decade 1930s (9) ☐ 1950s (4) ☐ 1960s (31) ☐ 1970s (43) ☐ 1980s (280) Show 3 more **Advertising Campaign** ☐ 3 minute call (2) ☐ Adam and Jane (57)☐ Airport (1) ☐ Always on my Mind (4) ☐ Animal Instincts (17) Show 45 more Function of film ☐ Advertising (536) □ Documenting events (45) ☐ Informational (public) (29) ☐ Informational (shareholders) (1) ☐ Informational (staff)

(24)

Show 4 more





Post Office

Tower

Construction.. Construction..



At the Third

Stroke

The Glorious

Sixth of June

A Slow

of...

Motion Study

The cable

Goonhilly

-aerial...

Post Office

Construction..

Tower

Radio Station

route through

Newfoundland







Shots of

snow,...

London in the











construction... Temporary...

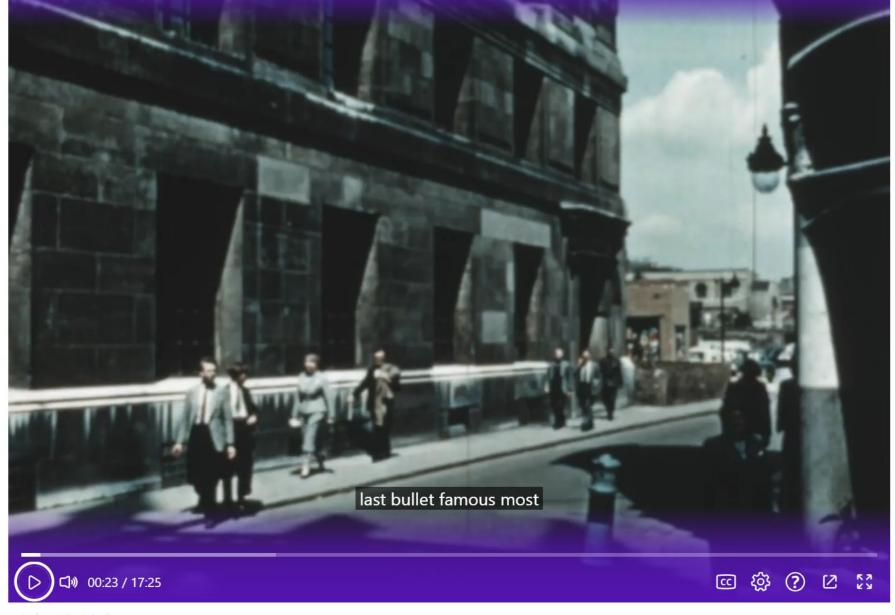








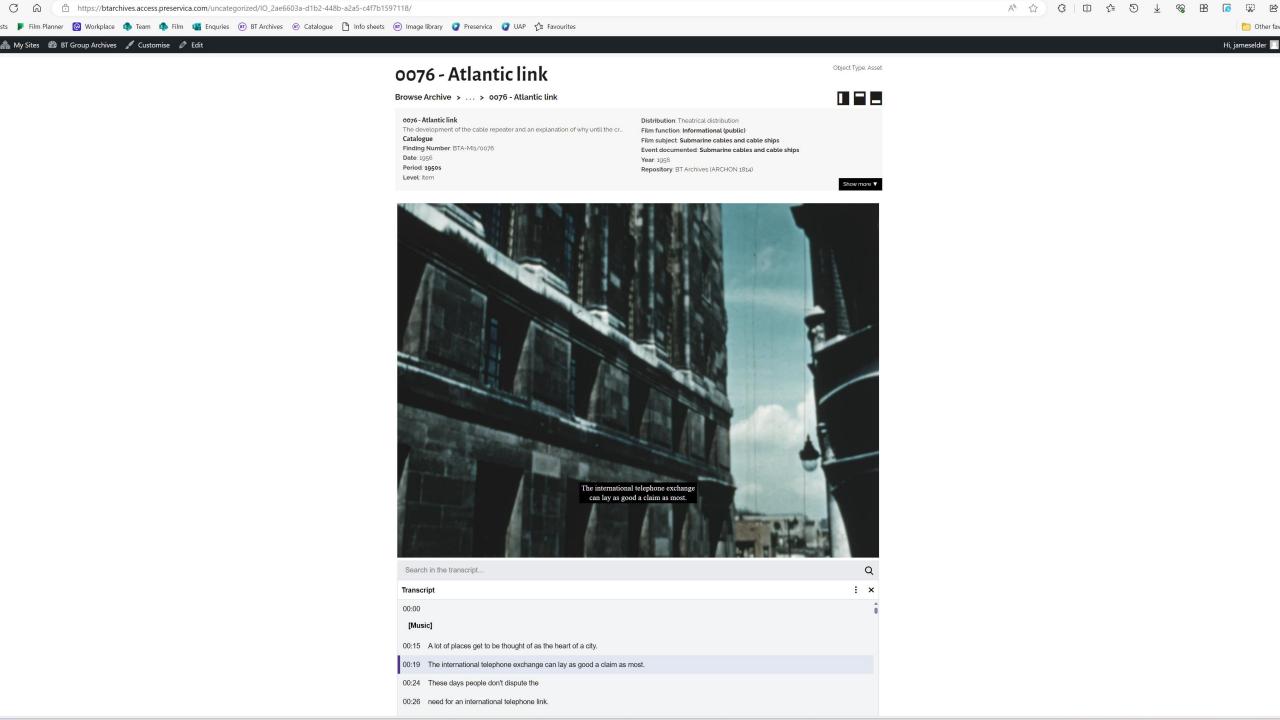
Post Office **Tower Lift** second trial...

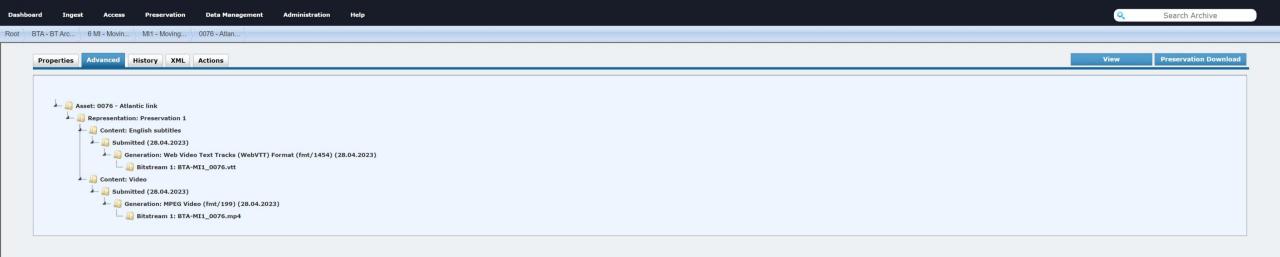


Atlantic Link

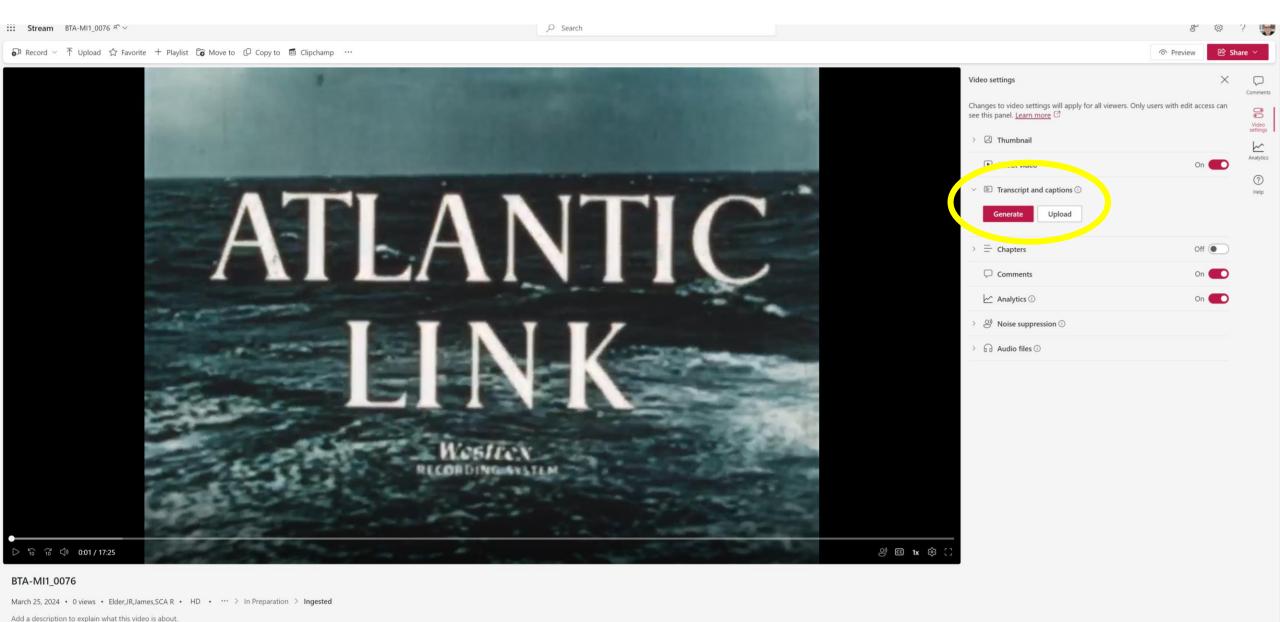
1956

The development of the cable repeater, and the laying, by HMTS Monarch, of the Atlantic submarine cable from the eastern shore terminal at Oban to Newfoundland. Includes details of the cable's construction and the difficult conditions encountered throughout the route. Production Company: Central Office of Information.









Research

Introducing Whisper

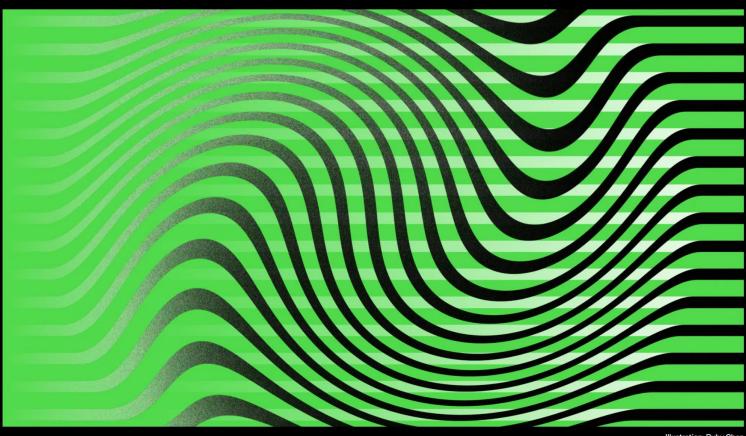


Illustration: Ruby Chen

We've trained and are open-sourcing a neural net called Whisper that approaches human level robustness and accuracy on English speech recognition.

N[!]kse.dk

Services

Subtitle Edit Online

Software

- Subtitle Edit
 - Help/FAC
- videos
- Xml Content Translato

Subtitle formats

- SubRip
- ASSA
- ASSA override tag

Download

- Subtitle Edit 4.0.3
- Xml Content Translator 1.12

About/contact

- About me
- <u>Email</u>

Donate

Donate

Subtitle Edit

Overview

Subtitle Edit is a free (open source) editor for video subtitles - a subtitle editor :)

With SE you can easily adjust a subtitle if it is out of sync with the video in several different ways.

You can also use SE for making new subtitles from scratch (do use the time-line/waveform/spectrogram) or translating subtitles.

For a list of features see below or check out the Subtitle Edit Help page.

On my blog you can download latest beta version and read about/discuss new features.

Also, you can watch a few videos about installing and using Subtitle Edit.

A Subtitle Edit dll (LibSe.dll) is available for programmers (BSD New/Simplified license). Compile it from source code or use the NuGet package.

Download latest version of Subtitle Edi

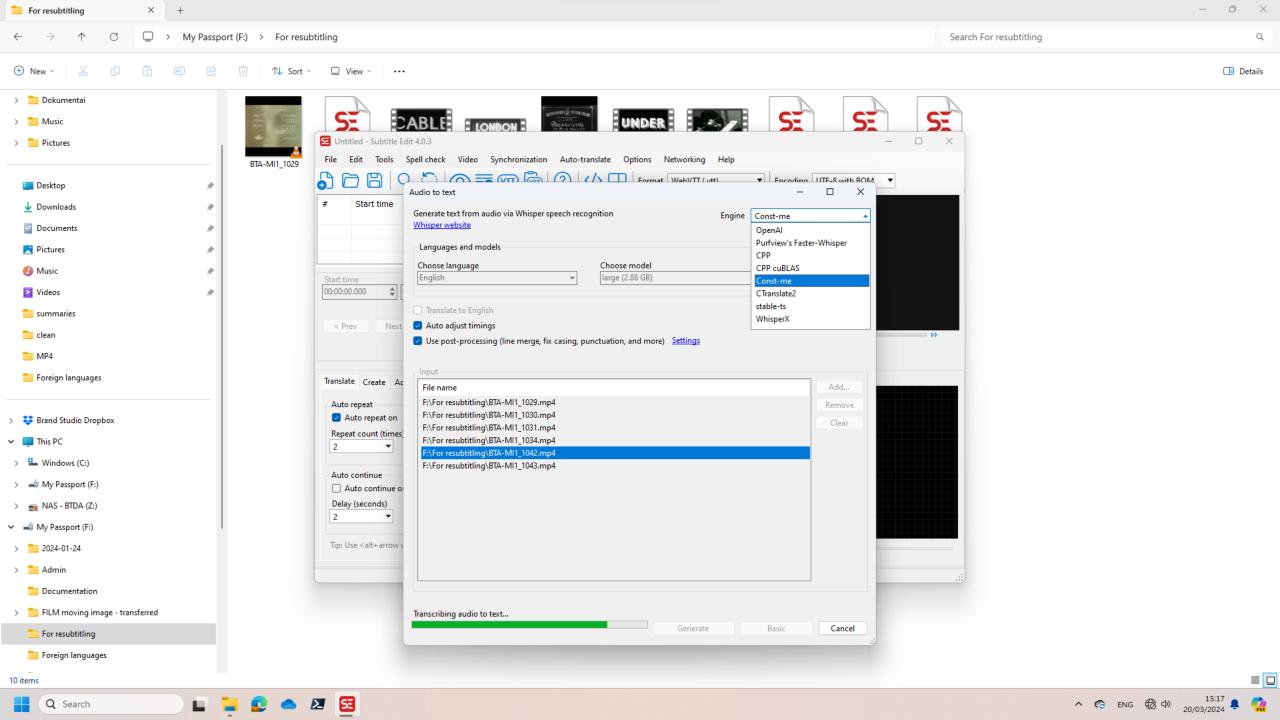
Note: SE requires Microsoft .NET Framework Version 4.8

Get the full C# source code - GPL or LGPL license

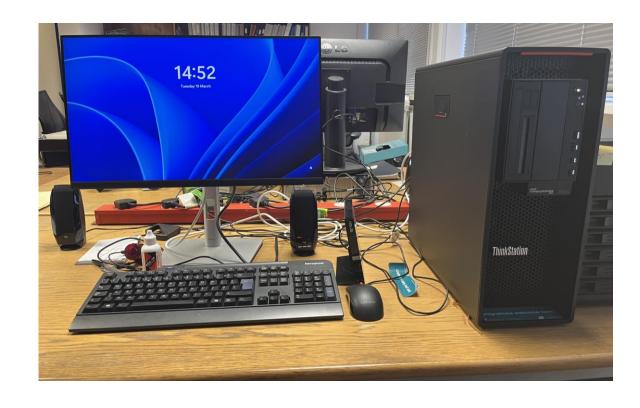
Blu-ray sup reading code is under the Apache License and Matroska subtitle parsing uses zlib code with a BSD style license.

Features

- Create/adjust/sync/translate subtitle lines
- Convert between SubRib, MicroDVD, Advanced Sub Station Alpha, Sub Station Alpha, D-Cinema, SAMI, youtube sbv, and many more (300+ different formats!)
- Cool audio visualizer control can display wave form and/or spectrogram
- Video by uses mpv, DirectShow, or VLC mean
- visually sync/adjust a subtitle (start/end position and speed)
- Audio to text (speech recognition) via Whisper or Vosk/Kaldi
- to Translation via Google translate
- Rip subtrues (descripted) di
- Import and OCR VobSub sub/idx binary subtitles
- Import and OCR Blu-ray .sup files bd sup reading is based on Java code from <u>BDSup2Sub</u> by 0xdeadbeef)
- Can open subtitles embedded inside Matroska files
- Can open subtitles (text, closed captions, VobSub) embedded inside mp4/mv4 files
- Can open/OCR XSub subtitles embedded inside divx/avi files
- Can open/OCR DVB and teletext subtitles embedded inside .ts/.m2ts (Transport Stream) files
- Can open/OCR Blu-ray subtitles embedded inside .m2ts (Transport Stream) files
- Can read and write both UTF-8 and other unicode files and ANSI (support for all languages/encodings on the pc!)
- Sync: Show texts earlier/later + point synchronization + synchronization via other subtitle
- Merge/split subtitles
- Adjust display time
- Fix common errors wizard
- Spell checking via <u>Libre Office dictionaries</u> (many dictionaries available)
- . Remove text for hear impaired (HI)
- Renumbering
- Effects: Typewriter and karaoke
- History/undo manager (Undo=Ctrl+z, Redo=Ctrl+y)





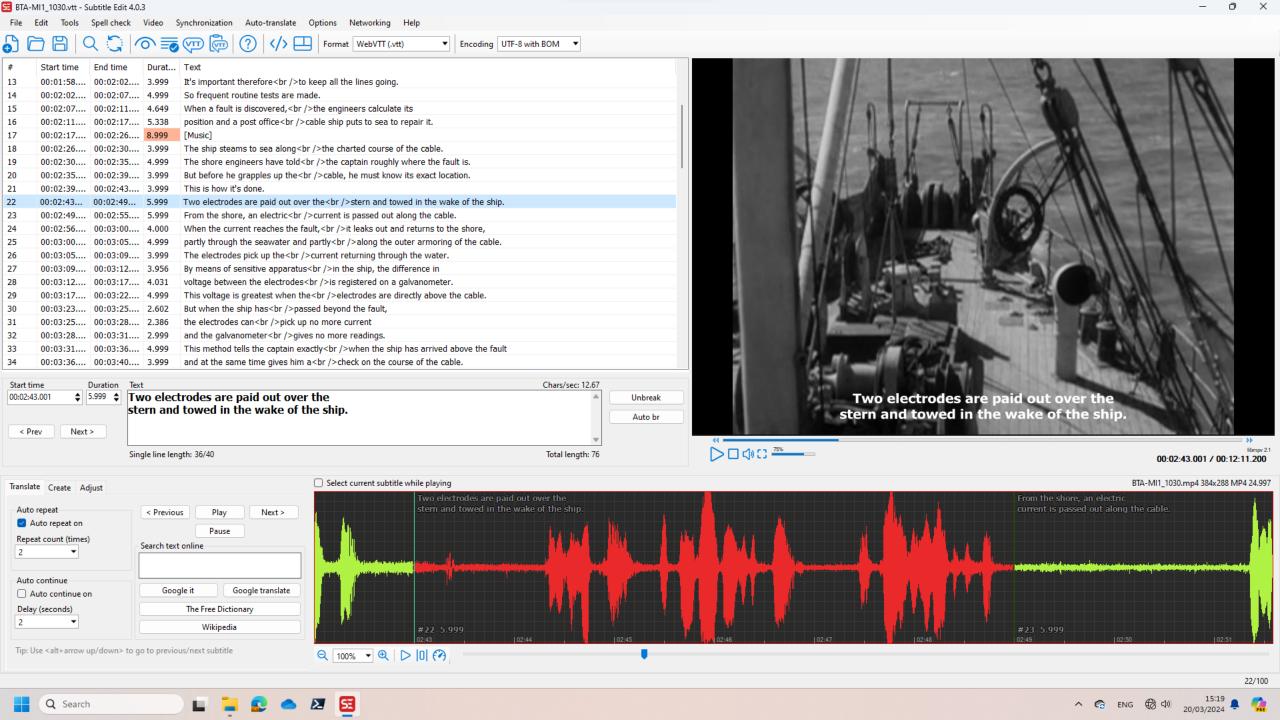


2015 MacBook Pro

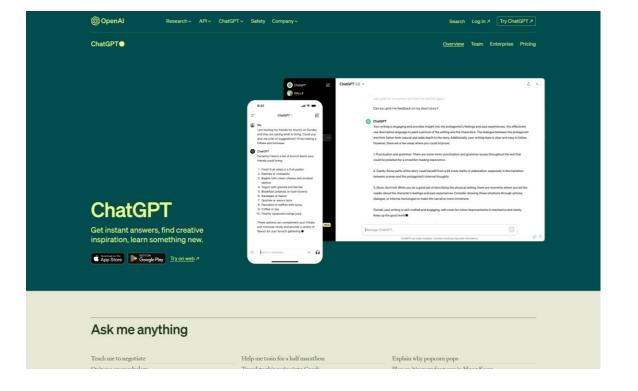
- Windows 10
- 3.1GHz dual-core Intel Core i7 processor
- 16GB 1866MHz memory
- Intel Iris Graphics 6100

Lenovo P620 Workstation

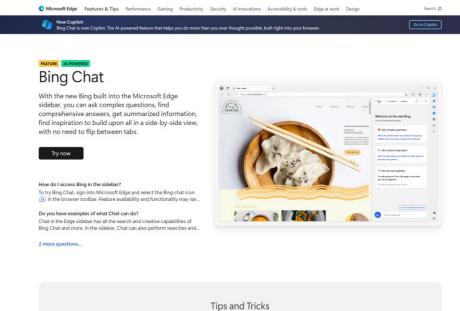
- Windows 11
- AMD Ryzen Threadripper PRO 5955WX processor
- 64 GB DDR4-3200MHz
- **NVIDIA RTX A2000 12GB GDDR6**







BT Group PowerPoint | Public | 20



Digital





Digital

Digital Campus Your Wellbeing Being trusted: our code Quality

Home > Data and AI > Data science

Data Science

Want to get more value from data? Or want to get your existing models into production quicker? No matter your CFU, we're here to help you!

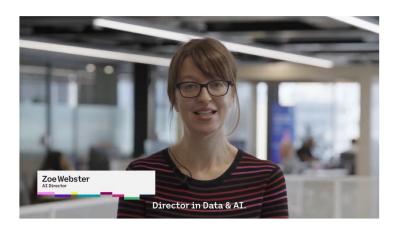
Digital's Data Science team can support you to accelerate the generation of value from data. We provide guidance, expertise, talented resource and templates to help colleagues extract insight from data faster and at scale.

We have in-house data scientists and analysts, ML engineers and platform specialists, together with a range of existing AI-based models that can be tailored and deployed across the business.



Click here to request a collaboration with us or to raise queries.

More about what we do

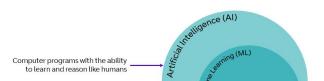


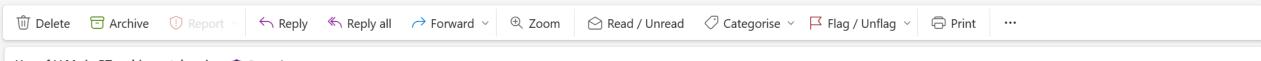
Watch our video to hear from Zoe Webster, Al Director in Data and Al, and find out more about what we do.

What is Data Science, AI and ML?

You'll hear the terms Data Science, Artificial Intelligence (AI) and Machine Learning (ML) a lot!

ML is a form of AI and Data Science can employ AI to derive insight from data. Al is just one way to generate value from data, but we think it has a lot to





Use of LLMs in BT archive cataloguing 🌘 General



← Reply ← Reply all → Forward □ ↓ ✓ ♦ 🔡 ···

Tue 2023-07-18 09:23

Dear <mark>Zoe</mark> and Chris

I'm not sure if this is the right way of doing this, but I just wanted to register the interest of BT Group Archives in the use of LLM-based tools as part of our work.

I've already identified a use case and have done some experiments with Bing (using non-sensitive data) and have got very promising results, although I'm bumping up against the 4000-character limit on input text.

The context is that here in BT Group Archives we look after the corporate memory and those records that need to be retained permanently. One of our main resources is an archive catalogue which we populate with descriptive and technical metadata about what we hold. Hence we have a need to write descriptive summaries of records.

At the moment one of our projects is the digitisation of a lot of vulnerable videotape from the early 1980s. Because we don't have a compatible tape player for this format, the contents are generally unseen until we get the transfers back from the contractor.

I am already making use of LLM-based software in the form of a C++ port of OpenAI Whisper (which we run locally on a standalone Lenovo workstation which we have purchased) to generate subtitles from the audio of the scanned videos. This has proved a great success, with Whisper matching its claimed accuracy of 99%, meaning we'll be able to provide accurate subtitles when we put the videos online. I have though now also done a few experiments taking the subtitle file, converting it to plain text and feeding it to Bing, asking it to produce a summary suitable for use in an archive catalogue.

I attach an example of a film, the VTT subtitle file, the plaintext conversion of that file and the summary that Bing produced.

Al demonstration

As you can see, it did a good job – and this would be suitable for use in our archive catalogue. Given that we have several hundred such summaries to produce every year, this would represent a major time saving for the Archives Team (which consists of only 4 people).

However, this transcript was just over the 4000 characters that Bing will accept as input text and hence I can't easily give it longer transcripts to work on. Moreover, with access only to the Bing tool in Edge I can't automate the process.

Is this something you could help with? Is there a pilot in which we could participate?

In the future, we also anticipate that a deep learning based system might be able to go a step further and base its summary on the visual content of the film as well as the transcribed audio.

I should note by the way that Anne Archer (Head of BT Group Archives) and I have already had conversations with Detlef Nauck, Andy Gower, Robert Hercock and Leah Claireaux about the work they are doing and potential uses within Archives.

I look forward to hearing from you. Many thanks in advance for your time.

James Elder

Archives Professional

How to go about it...?

Four tasks

Machine-readable input

Already nearly ready, but some tidying needed.

Choose a model

Requirements:

- Open source
- Able to run locally
- Suitable for our resources

Write a prompt

Aims:

- Explain the task
- Include all the information we already have
- Pull together the 4000 character sections
- Get a suitable tone in the output

Choose settings

Get the use of resources right



WEBVTT

00:00:05.400 --> 00:00:07.890 This was the site of Goonhilly radio station

00:00:07.902 --> 00:00:11.700 near Helston in Cornwall, England in the spring

00:00:12.001 --> 00:00:16.000 of 1961 when work started on the first Post

00:00:16.001 --> 00:00:19.500 Office aerial for satellite communication tests.

00:00:23.001 --> 00:00:28.000
The site stands on the largest deposit of serpentine in Cornwall.

00:00:28.001 --> 00:00:31.448 This rock breaks the surface, is over 1,000

00:00:31.460 --> 00:00:37.900 feet deep and it stretches for at least half a mile in all directions from the site.

00:00:41.001 --> 00:00:48.000 Pilot holes show that the cover is only 18 inches to 2

00:00:48.001 --> 00:00:54.600 feet deep and it is very easy to get down to bedrock.

00:01:01.001 --> 00:01:05.540 The rock itself, serpentine, though not very

00:01:05.552 --> 00:01:10.000 hard, is tough, does not cleave readily and

00:01:10.001 --> 00:01:18.000 it forms an ideal foundation for the concrete base of a delicate instrument.

00:01:18.001 --> 00:01:25.000

This was the site of Goonhilly radio station

near Helston in Cornwall, England in the spring

of 1961 when work started on the first Post

Office aerial for satellite communication tests.

The site stands on the largest deposit of serpentine in Cornwall.

This rock breaks the surface, is over 1,000

feet deep and it stretches for at least half a mile in all directions from the site.

Pilot holes show that the cover is only 18 inches to 2

feet deep and it is very easy to get down to bedrock.

The rock itself, serpentine, though not very

hard, is tough, does not cleave readily and

it forms an ideal foundation for the concrete base of a delicate instrument.

The circular track on which the aerial will rotate is some 40 feet in diameter and will

have running upon it a roller race supporting

the whole of the aerial system and allowing

it to turn in azimuth to any angle, that is to any bearing with respect to true north.

The track was machined in one of the very few factories capable of doing it.

It is of course in sections but these were all laid together in the factory for this

machining operation and then the sections

were sent separately to site and reassembled there.

A frames for supporting the top beam about

which the aerial pivots were cast on the ground

on either side of their final positions and then raised.

The bars projecting from the ends being welded up then encased in concrete.

The centre portal was cast in situ and the beam which Bridges the three frames.

The whole of the concrete work turns with the aerial.

The top beam has tubes set within it through



Meta Llama 2 Purple Llama Community Stories Get started

Large language model

Llama 2: open source, free for research and commercial use

We're unlocking the power of these large language models. Our latest version of Llama - Llama 2 - is now accessible to individuals, creators, researchers, and businesses so they can experiment, innovate, and scale their ideas responsibly.





With each model download you'll receive:

Available as part of the Llama 2 release

> Get started guide

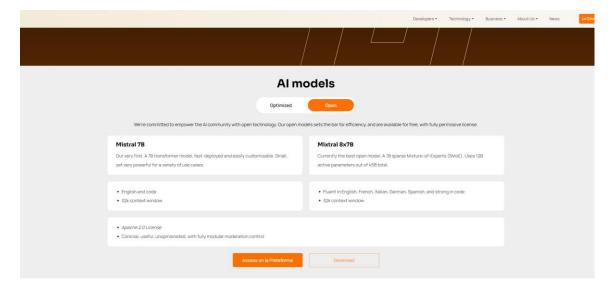
- Model code
- Model weights
 README (user guide)
- Responsible use guide

- Acceptable use policy Model card

Technical specifications

Llama 2 was pretrained on publicly available online data sources.

BT Group PowerPoint | Public | 28



Performance first

We're constantly innovating to provide the most capable and efficient models.

State-of-the-art technology

Mistral ranks second among all models generally available through an API, and provide top-tier reasoning capabilities.

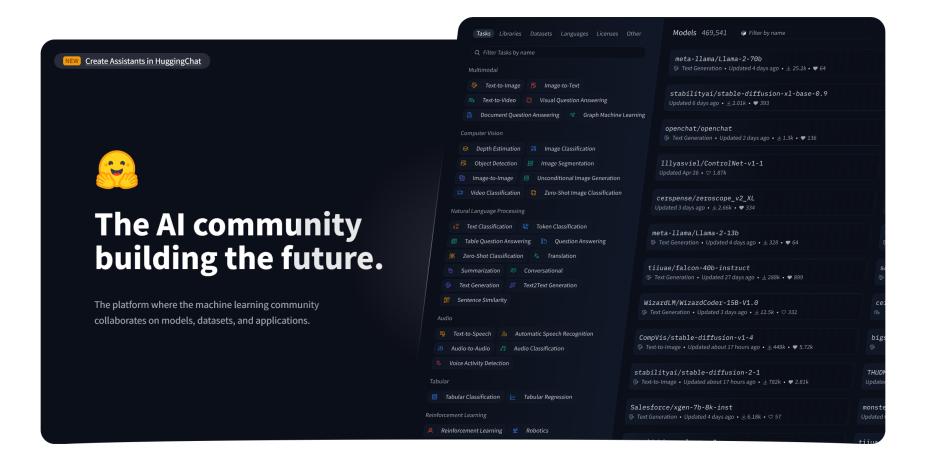
Measured independently

Our technology is regularly compared to the competition by independent



Hugging Face Search models, datasets, users...

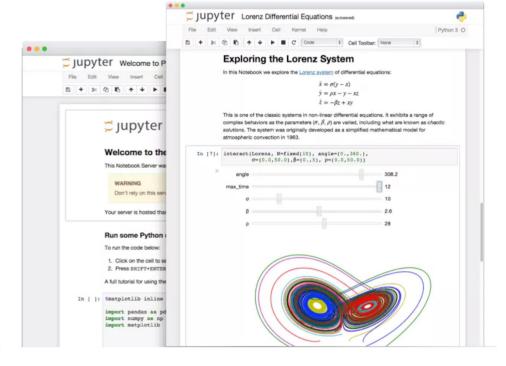














e of choice

orts over 40 programming languages, including Python, R, Julia,

Share notebooks

Notebooks can be shared with others using email, Dropbox, GitHub and the Jupyter Notebook Viewer



Interactive output

Your code can produce rich, interactive output: HTML, images, videos, LaTeX, and custom MIME types.

document-centric experience.



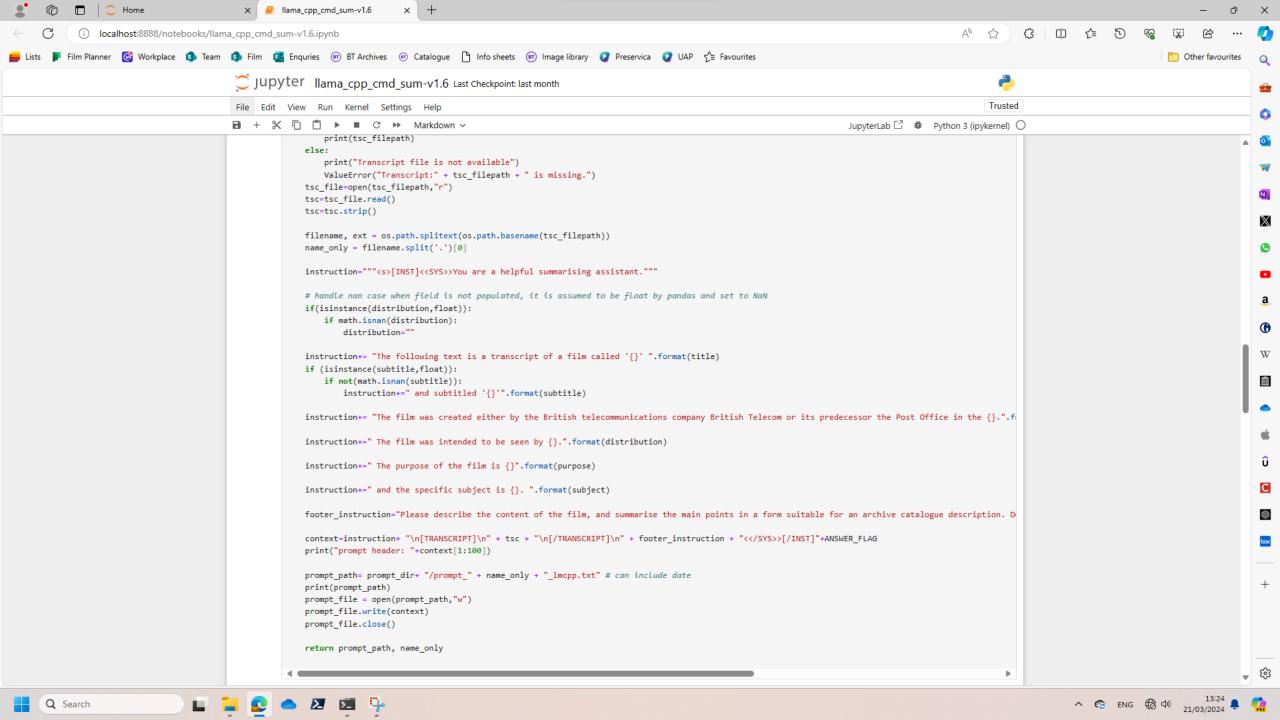
The Jupyter Notebook is the original web application for creating and sharing computational documents. It offers a simple, streamlined,

Jupyter Notebook: The Classic Notebook Interface

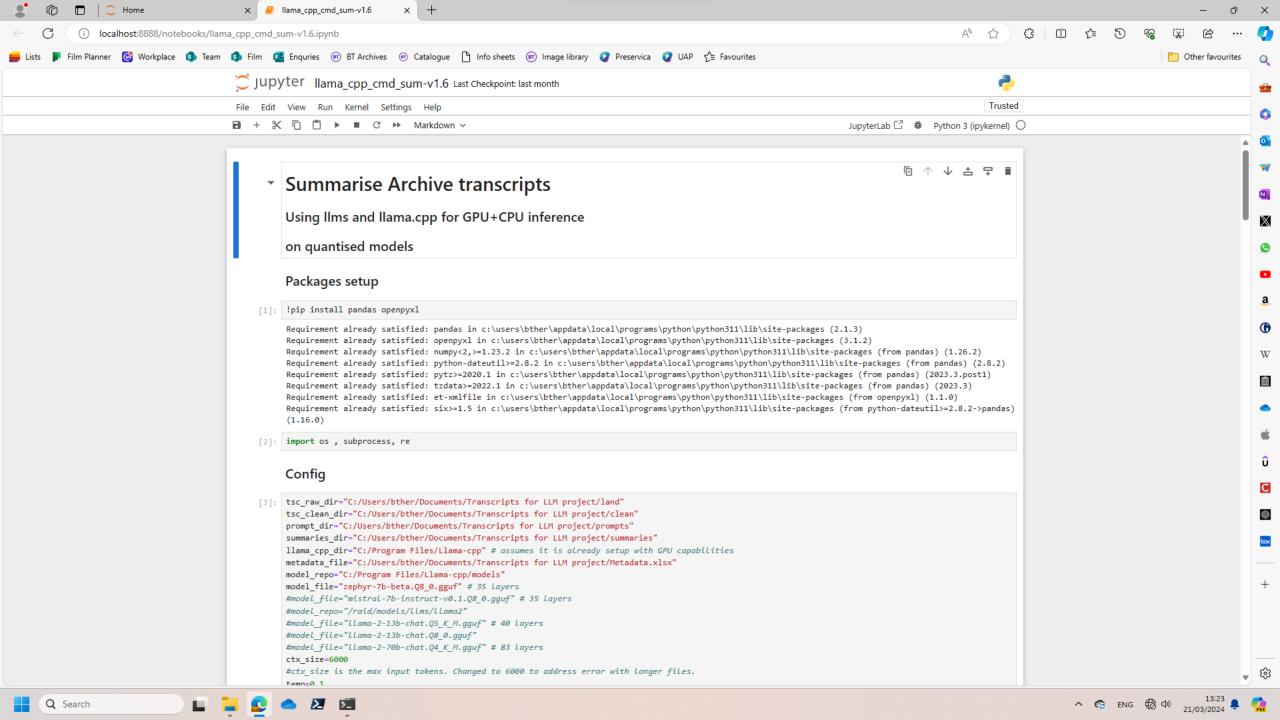
Big data integration

Leverage big data tools, such as Apache Spark, from Python, R, and Scala. Explore that same data with pandas, scikit-learn, g TensorFlow.











Title: Goonhilly Radio Station - Aerial Construction

This film, produced by either British Telecom or its predecessor the Post Office in the 1960s, documents the construction of the first Post Office aerial for satellite communication tests at Goonhilly radio station near Helston in Cornwall, England. The site is located on serpentine rock, which provides an ideal foundation for the concrete base due to its toughness and lack of cleavage. The circular track for the rotating aerial is machined in sections and assembled on-site, while frames for supporting the top beam are cast on either side of their final positions and then raised. The top beam has tubes set within it for tensioning bars, which are prestressed to 1200 pounds per square inch using a hydraulic tensometer. Four elevation bearings are lifted into position, with alignment affected optically through a disc in the centre of each housing. The steel work for supporting the bowl is erected, and concrete counterbalance weight boxes are hung beneath the beam to balance its weight. Ribs are placed in position, and steel plates form the reflector surface. Profile checking is carried out against an accurate template, and the finished bowl can be tipped through 100 degrees using a screw from the bottom housing. The aerial can be controlled locally or from a central control tower, and the driver watches it during active passes. Goonhilly Aerial has already successfully communicated with the Telstar satellite over 100 times and is ready to communicate with other targets.

IDENTITY					
FindingNumber	BTA-MI1/0286	ContextRef BTA/6 MI/MI1/0286			
PreviousCatalogueNumbers	FILM 1022				
Series					
Title	Goonhilly Radio Station - aerial construction				
SubTitle					
Alternative Titles					
Title Translation					
Date	1961	Year 1961 Decade 1960s			
Level	ltem				
CONTEXT		-			
Creator Name					
Cast And Crew					
Admin History					
Distribution	Unknown				
Awards					
	The text in the Description field was produced by a Large Language Model (Zephyr 7b beta - a fine-tuned version of Mistral 7b beta) from a transcript of the voiceover (which itself was produced using OpenAl Whisper). The LLM-generated text was then proofread and edited by James Elder. This access copy appears to be a telecine transfer by Planet TV of a 16mm print. This print was in better condition than that transferred to 1 inch videotape and held as BTA-MI2/5/014.				
CONTENT					
Function Of Film	Documenting events	Film Subject Satellite telecommunications			
Training Type		Internal Communication Type			
Event Documented	Goonhilly construction and modifications	Subject Of Promotion			
	This film, produced by the Post Office in 1961, documents the construction of the first Post Office aerial for satellite communication tests at Goonhilly radio station near Helston in Cornwall, England. The site is located on serpentine rock, which provides an ideal foundation for the concrete base due to its toughness and lack of cleavage. The circular track for the rotating aerial is machined in sections and assembled on-site, while frames for supporting the top beam are cast on either side of their final positions and then raised. The top beam has tubes set within it for tensioning bars, which are prestressed to 1200 pounds per square inch using a hydraulic tensometer. Four elevation bearings are lifted into position, with alignment affected optically through a disc in the centre of each housing. The steel work for supporting the bowl is erected, and concrete counterbalance weight boxes are hung beneath the beam to balance its weight. Ribs are placed in position, and steel plates form the reflector surface. Profile checking is carried out against an accurate template, and the finished bowl can be tipped through 100 degrees using a screw from the bottom housing. The aerial can be controlled locally or from a central control tower, and the driver watches it during active passes. Goonhilly's aerial has already successfully communicated with the Telstar satellite over 100 times and is ready to communicate with other targets.				
Shot List					
Footage Type					
Variant	I IIIdi VCISIOII				



Log in

BROWSE ARCHIVE

search

ARCHIVE Q

0286 - Goonhilly Radio Station - aerial constru...

Object Type: Asset

Browse Archive > ... > 0286 - Goonhilly Radio Station - aerial construction



0286 - Goonhilly Radio Station - aerial construction

This film, produced by the Post Office in 1961, documents the construction of the first Post Office aerial for satellite communication tests at Goonhilly radio station near Helston in Cornwall. England. The site is located on serpentine rock, which provides an ideal foundation for the concrete base due to its toughness and lack of cleavage. The circular track for the rotating aerial is machined in sections and assembled on-site, while frames for supporting the top beam are cast on either side of their final positions and then raised. The top beam has tubes set within it for tensioning bars, which are prestressed to 1200 pounds per square inch using a hydraulic tensometer. Four elevation bearings are lifted into position, with alignment affected optically through a disc in the centre of each housing. The steel work for supporting the bowl is erected, and concrete counterbalance weight boxes are hung beneath the beam to balance its weight. Ribs are placed in position, and steel plates form the reflector surface. Profile checking is carried out against an accurate template, and the finished bowl can be tipped through 100 degrees using a screw from the bottom housing. The aerial can be controlled locally or from a central control tower, and the driver watches it during active

passes. Goonhilly's aerial has already successfully communicated with the Telstar satellite over 100 times and is ready to communicate with other targets.

alogue

Finding Number: BTA-MI1/0286

Date: 1961

Period: 1960s

Level: Item

Distribution: Unknown

Film function: Documenting events

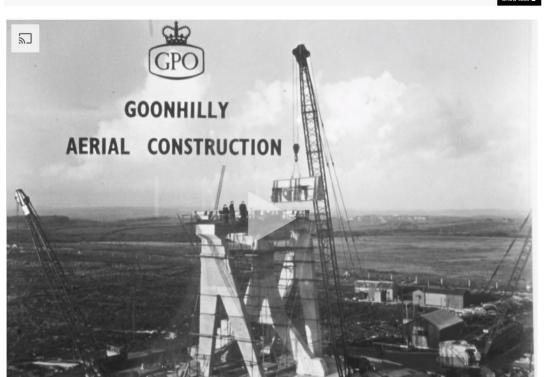
Film subject: Satellite telecommunications

Event documented: Goonhilly construction and modifications

/ear 1061

Repository: BT Archives (ARCHON 1814)

Show less A

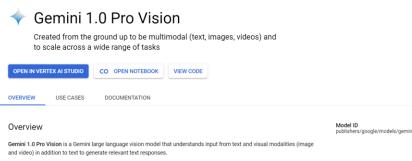


Learning points

- The right hardware makes a huge difference
- There must be a human in the loop
- Not suitable for all types of content
- LLMs are inconsistent
- The potential is huge

Future projects

https://www.sciencemuseumgroup.org.uk/projects/the-congruence-engine https://ceblog.sciencemuseumgroup.org.uk/



Model name	Input data	Output data	Description
Gemini 1.5 Pro	Text, image, video, and audio	Text	Massive context understanding with up to 1M input tokens and robust multimodal input (text, image, video and/or audio)
Gemini 1.0 Pro	Text	Text	The best performing model with features for a wide range of tasks.
Gemini 1.0 Pro Vision	Image and text	Text	The best performing image understanding model to handle a broad range of applications.

as photographs, documents, infographics, and screenshots.

Use cases

- · Visual information seeking: Use external knowledge combined with information extracted from the input image or
- Object recognition: Answer questions related to fine-grained identification of the objects in images and videos

Gemini 1.0 Pro Vision is a foundation model that performs well at a variety of multimodal tasks such as visual understanding. classification, summarization, and creating content from image and video. It's adept at processing visual and text inputs such

- . Digital content understanding: Answer questions and extract information from visual content like infographics,
- . Structured content generation: Generate responses based on multimodal inputs in formats like HTML and JSON.
- . Captioning and description: Generate descriptions of images and videos with varying levels of details
- . Reasoning: Compositionally infer new information without memorization or retrieval.



TUESDAY, 2 JANUARY, 1912.

No. 2028.

The Postmaster General has appointed Mr. C. W. Hurcomb to be his Principal Private Secretary in the place of Mr. Kenclm Kerr, promoted.

The Secretary has appointed Mr. F. H. S. Grant to be his Private Secretary in the place of

Mr. R. L. Morgan, Postmaster of Nelson, to be Postmaster of Neath.

Gallant Conduct.

The Postmaster General has heard with much pleasure that the Royal Humane Society have awarded their Honorary Certificate to Mr. E. A. F. Howes, Auxiliary Postman at Brockley, London, S.E., for saving a grif from drowning on the 3rd of August last; and also to Mr. W. Relly,

Newspapers, Clubs, &c.

The following alterations should be made in the List:-

Enter Hardwareman and Ironmongers' Chronicle (139-140, Fleet Street, E.C.).
Erass Ironmongers' Chronicle and the Hardwareman (139-140, Fleet Street, E.C.).
Enter Labour Press Agency (61, Fleet Street, E.C.).
After address of Observer from 123, Strand, W.C., to 12 and 14, Newton Street, High Holborn, W.C.
Enter (Ptymonth) Western Evening Heralt-Mid-Devon and Torquay Special,
After astross of Railo to 1, Birchin-Hand Court, 76, Chespade, M.C.
Enter Western Evening Heralt-Mid-Devon and Torquay Special (Ptymouth).

Thankyou

