

## **Building LLM-based Systems** & Products at Paranal



Engineering with prompts, rather than prompt engineering

Cristóbal Alcázar MSc in Finance & (not yet) MSc in Data Science

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- MSc (not yet) in Data Science @U. de Chile
- Current research: diffusion generative models, RLHF. Supervised by Felipe Tobar.
- □ MDS7203 Deep Generative Models: Teaching assistant.
- □ Hugging Face student ambassador program.
- Finance and Economic background.
- Work Experience: 3 years in Macroeconomic Statistics area at the Central Bank of Chile. 2 years at a Fintech joint venture on payments (currently the payment subsidiary of BancoEstado).
- Currently at @ ESO Paranal Software group (winter-internship 2023).



## Context

LLM, embeddings, generative models, context window



#### **Neural Networks and Representation Learning**

Learning a simplified numerical representation of complex data



- Embeddings: Vectors representing complex data in a numerical and dense format.
- Vector space representation: Imagine a space where data resides. Within this space, dogs cluster together, forming a distinct neighborhood than cats, but both classes lives in a different district than humans.
- Embeddings as a features: These vectors serve as a foundation for constructing various systems (object recognition, scene detection).



#### Neural Networks and Representation Learning

End-to-end system, from raw data to task mapping layers.



bias)



Image source: t-SNE visualisation of CNN Codes (Karpathy)

Task mapping layer (model head)

### **Vector Semantics and Embeddings**



"You shall know a word by the company it keeps" .- Firth, 1957



- Distributional hypothesis: the meaning of a word can be derived from the distribution of contexts in which it appears.
- Contextual embeddings: to capture the semantic of a word or token, context is critical. It's necessary a way to resignify a fix embedding given their context.
- More about sequence models: <u>Sequence Models</u> with Transformers. A Journey Through Language Models, Current Insights, and Practical Applications at Paranal Observatory (Carvaial, Alcázar 2023).

#### 2023 NeurIPS Test of Time Award

Distributed Representations of Words and Phrases and their Compositionality (word2vec)



#### **Jeff Dean (@) 🧇** @JeffDean

On behalf of our co-authors Tomáš Mikolov, @ilyasut and Kai Chen, @greg\_corrado and I were delighted to accept the #NeurIPS2023 Test of Time Award for the "word2vec" paper (arxiv.org/abs/1310.4546). Thanks to the @NeurIPSConf test of time committee for honoring us with this award!

This work started as an earlier ICLR 2013 workshop paper (arxiv.org /abs/1301.3781) that explored a few different self-supervised techniques for learning word embeddings. The skip-gram approach worked better than others, and we scaled that and explored various alternative loss functions in the NeurIPS paper.

The geometric relationships contained in the trained word embeddings were one thing about this work that I think people found interesting (see images from our talk below).

#### Traducir post



#### 🎒 Google Al 🤣 @GoogleAI · 12 dic. 2023

Congratulations to Jeff Dean, Greg Corrado, & co-authors of the paper "Distributed Representations of Words and Phrases and their Compositionality", for winning the #NeurIPS2023 Test of Time Award! This prize recognizes a highly impactful paper published at NeurIPS 10 years ago.





### A Neural Network to predict the next token in the sequence

Generative Pre-trained Transformer (GPT)



Image Source: How GPT3 Works - Visualizations and Animations (Alammar 2020)



#### How to Achieve a ChatGPTish Model?

Involved at least 2 training stages and result in a lossy compression about 5 order of magnitude







Source: Intro to Large Language Models (Karpathy 2023)

Resource - Llama 2: Open Foundation and Fine-Tuned Chat Models (paper)

llama-2-70b

parameters

140GB

.C

run.c

#### Zero-shot prompt



Just feed the task text to the model and ask for results.

**Text:** i'll bet the video game is a lot more fun than the film. **Sentiment:** [MODEL COMPLETION]

#### Few-shot prompt

High-quality task demonstrations, showcasing input-output pairs. **Pros:** enhance comprehension of human intent and expected answer criteria. **Cons:** increase token consumption and context length limitations.

**Text:** (lawrence bounces) all over the stage, dancing, running, sweating, mopping his face and generally displaying the wacky talent that brought him fame in the first place. **Sentiment:** positive

**Text:** despite all evidence to the contrary, this clunker has somehow managed to pose as an actual feature movie, the kind that charges full admission and gets hyped on tv and purports to amuse small children and ostensible adults. **Sentiment:** negative

**Text:** i'll bet the video game is a lot more fun than the film. **Sentiment:** [MODEL COMPLETION]



# **The Internship**

## In a nutshell

#### **Internship Overview**



Datasource Aggregator - Reporting Tool - Spin off Projects



M

API



#### **Datasource Aggregator**



A comprehensive API featuring various endpoints for retrieving specific data from diverse sources



- Aggregator: connecting different data sources.
- Specific interaction with data sources

(e.g., obtaining a ticket for a user).

Independent project; Reporting Tool is the first service...

#### Get Issues By User Between

Returns issues related to a specific ITS (Jira) user within a time range between from\_date and to\_date.

#### Parameters:

- jira\_user (str): The ITS (Jira) user to retrieve issues for.
- from\_date (str): The date to retrieve issues from. Format: YYYY-MM-DD.
- to\_date (str): The date to retrieve issues to. Format: YYYY-MM-DD or 'HEAD' for the current date.

#### Returns:

• List[JiraIssue] : A list of parsed ITS (Jira) issues.

#### QUERY PARAMETERS

⊣ jira_user	string (Jira User) Default: "jaraneda" The ITS (Jira) user to retrieve issues for.
from_date	string (From Date) Default: "2023–11–25" The date to retrieve issues from.
⊣ to_date	string (To Date) Default: "2023-12-25" The date to retrieve issues to. You can use 'HEAD' to retrieve issues up to the current date.



#### Responses

#### > 200 Successful Response

Source: <u>https://scgitlab.sc.eso.org/psw/projects/datasource-aggregator</u>

## **Reporting Tool**

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Application to Generate Reports Automatically

- Automatic generation of reports through summarization using LLM.
- Builds the domain of information requested by the user.
- User serves as an editor with the option to edit and remove the information to be used by the LLM (augmented tool).



## **Spin off Projects**



Vector Similarity Search & Retrieval Augmented Generation

- **ESOteric**: a "talk with your files" chatbot.
- **DejaVu** (by NMI).
- Two core concepts behind these spin off projects.
  - Vector Similarity Search
  - Retrieval Augmented Generation (RAG)





### ESOteric: a "Talk with your Files" Q&A

Retrieval Augmented Generation (RAG) Pattern



- Streamlit
- LangChain 🍾 🔗
- <u>OpenAl</u>



## *Why read when you can communicate directly with your files?*

You need some inspiration? Try a pdf from the Project Gutenberg frequently downloaded ebooks (totally legal!)

#### Upload a PDF file

Drag and drop file here
Limit 200MB per file • PDF

Browse files

×

pride-and-prejudice.pdf 28.3MB

Your document pride-and-prejudice was successfuly uploaded!

Embeddings loaded from disk

Ask me anything! 🧇 (related to the document of course...)

Do you really believe Miss Elizabeth Bennet was in love with Mr. Darcy? Can you provide an example?

Spin off Projects

VectorDE



## ESOteric: a "Talk with your Files" Q&A

Retrieval Augmented Generation (RAG) Pattern



https://gitlab.eso.org/calcazar/esoteric-qa



- □ A retrieve-based QA System:
  - A large document, or a collection of documents, is transform into a knowledge base using embeddings.
  - 2. User ask questions that retrieve information from the knowledge data using a large language model.



#### How to Create a Vector Database?

A simple split-apply pattern to create a vector database





Create your own vector database with OpenSearch <a href="https://gitlab.eso.org/calcazar/langchain-series/-/tree/main/examples/embedder">https://gitlab.eso.org/calcazar/langchain-series/-/tree/main/examples/embedder</a>



#### How to Create a Vector Database?

A simple split-apply pattern to create a key, value database





"knowledge database"

Create your own vector database with OpenSearch <a href="https://gitlab.eso.org/calcazar/langchain-series/-/tree/main/examples/embedder">https://gitlab.eso.org/calcazar/langchain-series/-/tree/main/examples/embedder</a>



## Retrieve Documents using Natural Language

Embeddings deliver similarity metrics, while the remainder involves ranking and retrieval



Create your own vector database with OpenSearch <a href="https://gitlab.eso.org/calcazar/langchain-series/-/tree/main/examples/embedder">https://gitlab.eso.org/calcazar/langchain-series/-/tree/main/examples/embedder</a>

Spin off Projects

VectorDB



### **Retrieval Augmented Generation**

Improve LLM input by retrieving and incorporating pertinent data from a vectorDB



Spin off Projects

VectorDB







#### **ESOteric sample responses**



Ask me anything! 🤓 (related to the document of course...)

Do you really believe Miss Elizabeth Bennet was in love with Mr. Darcy? Can you provide an example?

Do you really believe Miss Elizabeth Bennet was in love with Mr. Darcy? Can you provide an example?

Yes, I believe Miss Elizabeth Bennet was in love with Mr. Darcy. An example of this is when Mr. Darcy tells Miss Bingley that Miss Elizabeth Bennet is his favorite lady, and Miss Bingley is surprised by this revelation.

Ask me anything! 🤓 (related to the document of course...)

Why is Lizzy Mr. Bennet's favorite daughter?

Why is Lizzy Mr. Bennet's favorite daughter?

Based on the given context, it is not explicitly stated why Lizzy is Mr. Bennet's favorite daughter.





## DejaVu: A Vector Similarity Search for ITS Issues

A practical and clean application of vectorDB, by NMI





# Automate Report Generation

How we build a system that take relevant information, categorize, and summarize from the users' perspective?

#### **Reporting Tool**

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Application to Generate Reports Automatically

Enter your username 🖣	Reportin	g Tool												
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Source: https://scgitlab.sc.eso.org/psw/projects/reporting-tool



#### **Report Generation**

User Domain Information & Impersonation





#### How does the LLM Interaction Work?

Let's Break Down the Summarizer...





#### How does the LLM Interaction Work?

#### Let's Break Down the Summarizer...























"Your goal is to create a system that helps users quickly grasp the key "the information from JIRA tickets, enabling efficient collaboration and problem-solving."











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### **Reporting Tool Challenges**

Measure and Evaluate Performance



## **Reporting Tool Challenges**

Proprietary versus In-house models

- Fine-tuning: Adjusting the models parameters with their own data.
  - a. Pros: privacy and more control about the model.
  - b. Cons: requires infrastructure and demand dedicated expertise.
- LoRA: The idea is to represent the finetuned weight as a multiplication of two matrices that use a low rank decomposition. Only finetune a fraction of the model.









# Other Projects Non-LLM

#### **MSE Ops Role Assignation**



#### (MORA)

- Rostering Problem: Use a constraint programming solver (by ORTools) to solve the operational role assignment (i.e. TCO, VLTI).
  - a. \_set\_one\_engineer\_per\_role\_assigned 🔽
  - b. \_set\_at\_most\_one\_assignation\_per\_day 🔽
  - c. \_set\_availability\_and\_certification\_constraints 🔽
  - d. \_set\_consecutive\_days\_constraint 🛕
  - e. \_set\_no\_last\_day\_assignment\_constraint ႔
  - f. \_set\_mandatory\_role\_constraint ႔
  - g. \_set\_balance\_objective 🔥
- Format & Report results: automate the report with the assignment results.

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Bolades, Cines G Bouget, Ferrer Ockhonster, Herr Ockhonster, Herr Dubost, Nocola Dubost, Nocola Gonzaler, Jaine Pars, Rocard Marson, Genardo Wala, Jong Canigosta, Lub Canigosta, Mandol Canigosta, Mandol Cani	PAD 0 PAD 0 L L PAD 0 0 L L L PAD 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	PAO           PAO           PAO           PAO           CIII           CIIII           PAO           L           CIIII           PAO           D           L           CIIII           PAO           D           L           RW           PAO           L           L           PAO           L           L           PAO           L           PAO           L           L           L           L           PAO           L           L           L           L           L           L           L           L      NO           PAO           PAO           PAO           PAO           PAO           PAO           PAO           PAO           PAO           D           O           TU+L	0 PAO PAO 0 L UTT 0 PAO 0 0 C VITT 1 C 0 0 VITT 1 0 0 0 0 0 0 0 0 0 0 0 0 0	0 PAO 0 L PAO 0 PAO 0 PAO 10 10 10 10 10 10 10 10 10 10	0 PAO PAO 0 L\ 0 PAO 0 L U 0 L 0 VUTI PAO L 0 PAO 0 0 VUTI 0 PAO 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 Pac PAO 0 0 0 PAO PAO 0 L 0 L 0 PAO VLTI L 0	0 Pac 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 1 0 0 1 0 1 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	TU+ Pec 0 0 0 TU+ TU+ TU+ TU+ L U+ L 0 PAO	Сте Рас 0 0 РАО РАО РАО РАО РАО РАО Ц ТСО	0 0 0 PAO PAO PAO PAO 0 PAO 0 TCO	0 0 0 PAO PAO PAO PAO PAO	PAC 0 PAC+ 0 PAC+ PAC 0 PAC 0 PACTU\ PAC	PAO 0 PAO 0 PAO 0 PAO 0 0	PA0 0 PA0 0 PA0 0 PA0 0 0	PA0 0 PA0 PA0 PA0+ PA0+	PADTU\ PAO+ PAO PAO PAO PAO PAO	0 PAO PAO 0 PAO PAO	0 PAO PAO 0 PAO PAO	0 PaC PAO\ 0 PAD\ 0	0 PoC 0 0 0	0 PeC 0 0 0 0	TU+ PoC 0 0 0 0 0 TU+	VSTM PoC\ 0 0 0 0 0 0 0 0 0 0 0 0 0	VSTM 0 0 0 0 0 PAO	VSTM 0 0 0 PAO+ PAO	Pink 0 PAO+ 0 PAO+ VSTM PAO 0 L\	PAC 0 PAC 0 PAC VSTM PAC 0 0	PAO 0 PAO 0 PAO VSTM PAO 0 0
Bounget, Firere Octo-Purseew, twel Cock-Purseew, twel Genzate, James Parnere, Christian Santow, Constan Santow, Constan Santow, Constan Santow, Constan Company, Techto Company, Techto Compan	0 PAO 0 L PAO 0 0 0 PAO 0 0 0 0 0 0 0 0 0 0 0 0 0	PAO+ PAO 0 1 Umm PAOTU/ PAOTU/ PAO+ 0 L Umm PAO+ 0 L VETM PAO/ VETM L VETM PAO/ PAO/ PAO PAO- PAO- C L VETM PAO- PAO	PAO PAO 0 L L 0 PAO 0 0 PAO 0 0 0 KW 0 L L L L L L L L 0 0 0 0 0 0 0 0 0 0	PAO PAO 0 L PAO 0 PAO TU+ 0 L+ 0 L+ 0 L L 0 L L 0 L L 0 0 0 0 0	PAO PAO 0 L\ 0 PAO PAO 0 L L 0 VCTI PAO L 0 PAO 0 VCTI PAO 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Paic           PAO\           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           0           1           0           V101           0	Post 0 0 0 0 0 PAO PAO 0 L 0 L 0 L 0 PAO YUTI L	Pact           0           0           0           0           0           10+           PAO           PAO           PAO           TU+           L           TU+           L           0           PAO	PoiC) 0 PAO PAO PAO PAO PAO L) TCO	0 0 0 PAO PAO PAO PAO 0 PAO 0 TCO	0 0 0 PAO PAO PAO PAO PAO	0 PAO+ 0 PAO+ PAO 0 PAO1U\ PAO	0 PAO 0 PAO 0 PAO 0	0 PAO 0 PAO 0 PAO 0	0 PAO PAO PAO+ PAO+	PAO+ PAO 0 PAO PAO PAO	PAD PAD 0 PAD PAD	PAO PAO 0 PAO PAO	PaC PAO\ 0 PAO\ 0	PoC 0 0 0	PoC 0 0 0	PoC 0 0 0 0 TU+	PolC1 0 0 0 0 PAO	0 0 0 0 0 PAO	0 0 0 PAO+ PAO	0 PAO+ 0 PAO+ VSTM PAO 0 L\	0 PAO 0 PAO VSTM PAO 0 0	0 PAO 0 PAO VSTM PAO 0 0
Chick-Prousers, teal Daxoe, Isole Daxoe, Isole Constant, Jacob Restructure, Chickan Sento, Garado Vilaz, Jorge Con, Vilaz, Jorge Dispos, Paccal Dispos, Pacc	PAO 0 L PAO 0 0 L L PAO 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	PAO 0 L 0 PAOTU\ PAOTU\ PAOTU\ PAOTU\ PAOTU\ PAOTU\ RW PAOTU\ L PAOTU\ L PAOTU\ PAOTU\ RW PAOTU\ L L L L L L L L L L L L L	PAO 0 L 0 PAO 0 0 KW 0 L 0 L L L U U U U U U U U U U U U U U	PAO 0 L PAO 0 PAO 1 U+ 0 L+ 0 VITI 1 CO L VITI 0 0 VITI 1 0 0 0 VITI 1 0 0 0 0 0 0 0 0 0 0 0 0 0	PAO 0 11 0 PAO PAO 0 L 0 L 0 VUTI PAO L 0 PAO 0 0 VUTI PAO 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	PAO\ 0 0 PAO PAO PAO D L U U U U U U U U U U U U U U U U U U	0 0 0 0 0 PAO PAO 0 L 0 L 0 PAO YOT L	0 0 TU+ TU+ PAO PAO TU+ L TU+ L 0 PAO	0 0 PAO PAO PAO PAO PAO PAO L\ TCO	0 0 PAO PAO PAO PAO PAO PAO PAO 0 TCO	0 0 PAO PAO PAO PAO PAO	PAO+ 0 PAO+ PAO PAO 0 PAOTU\ PAO	PAO 0 PAO 0 PAO 0 0	PAO 0 PAO 0 PAO 0	PA0 0 PA0 PA0+ PA0	PAD 0 PAD PAD	PAO 0 PAO PAO	PAO 0 PAO PAO	PAO\ 0 PAD\ 0	0 0 0 0 0 0	0	0 0 0 0 TU+	0 0 0 0 PMO	0 0 0 PAO	0 0 PAO+ PAO	PAO+ 0 PAO+ VSTM PAO 0 L\	PAO 0 PAO VSTM PAO 0 0	PAO 0 PAO VSTM PAO 0 0
Daron, Londer Dubest, Nicolai Genzalez, Jaine Rartere, Chistan Sentor, Chistan Sentor, Chistan Sentor, Garado Wala, Jong Careguant, Petro Careguant, Petro Careguant, Petro Careguant, Betro Careguant, Petro Careguant, Petro Siggiat, Fernando Siggiat, Fernando Vandarhyten, Janen Daberti, Algendro Daberti, Algendro Daberti, Algendro	L     Um     PAO     0     0     L     L     F     PAO     0	0 L U U U U U U U U U U U U U	0 L 0 PAO 0 0 RW 0 0 VITI TCO L L VITI VITI 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	0 L PAO PAO TU+ 0 L+ 0 L+ 0 L+ 0 L+ 0 L+ 0 0 UTI TCO L L 0 0 0 0 0 0 0 0 0 0 0 0 0	0 L\ 0 PAO PAO 0 L 0 VUTI PAO L 0 VUTI PAO 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 9 9 0 9 0 0 1 0 0 0 0 0 9 0 0 9 0 0 1 0 0 9 0 0 1 0 0 0 0	0 0 0 7AO 7AO 0 L 0 L 0 7AO 0 2 L 0 7AO 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 0 TU+ TU+ PAO PAO TU+ L TU+ L 0 PAO	0 PAO PAO PAO PAO PAO L\ TCO	0 PAO PAO PAO 0 PAO PAO PAO PAO 0 TCO	0 0 PAD PAO 0 PAO PAO PAO	0 PAO+ PAO\ PAO 0 PAOTU\ PAO	PAO 0 PAO 0	0 PAO 0 PAO 0	D PAO+ PAO+	0 PAD PAD	0 PAO PAO	0 PAO PAO\	0 PAD\ 0	0	0	0 0 0 TU+	0 0 0 PAO	0 0 0 PAO	0 0 PAD+ PAO	0 PAO+ VSTM PAO 0 L\	0 PAO VSTM PAO 0	0 PAC VSTM PAC 0 0
Dubost, Nocian Ganzaler, Janne Parame, Cholisan Martine, Cholisan Martine, Cholisan Martine, Cholisan Martine, Martine Candreave, Nocian Martine, Antonio Candreave, Rocan Base, Chistan Martin, Bardon Palquinan, Jorgio Palquinan, Jorgio Palquinan, Jorgio Palquinan, Jorgio Martine, Patrobo Usadempleur, Parol Daberti, Magnetrio Doberti, Magnetrio Doberti, Magnetrio	0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	L UT3 PAOT4 PAO+ C L\ RW PAO1 L+ PAO1 L+ L+ C PAO+ L+ L L C PAO+ L+ L L L L L D D D D D D D D D D D D D	PAO 0 0 RW 0 L 0 Vtn L L L L L 0 0 0 0 0 0 0 0 0 0 0 0 0	L PAO\ 0 PAO TU+ 0 L+ 0 L+ 0 VETI TCO L L VETI 0 0 0 0 0 0 0 0 0 0 0 0 0	L\ 0 PAO PAO 0 L U U U VUTI PAO 0 PAO 0 0 0	0 0 0 7A0 7A0 0 1 1 0 7A0 7A0 7A0 7A0 7A0 7A0 7A0 7A0 7A0 7	0 0 2AO 2AO 2AO 0 1 1 0 2 4 2 2 4 2 2 4 2 2 2 2	0 TU+ TU+ PAO PAO TU+ L TU+ L 0 PAO	PAO PAO PAO PAO PAO L\ TCO	PAO PAO PAO PAO PAO 0 TCO	0 PAO PAO 0 PAO PAO	PAO PAO 0 PAOTU\ PAO	0 PAO 0	PA0 0 PA0 0	PAD PAD+ PAO	PAD PAD		PAD PAO	PAD\ 0	0	0	0 0 TU+	0 0 PAO	0 0 PAO	0 PAO+ PAO	VSTM PAO 0 L\	PAO 0	PAD VSTM PAD 0
Genzaler, Jame Parn, Ricardo E Rariner, Christian Servi, Genzida Servi, Genzida Cenzing Cenzing Marn, Kotolis Barz, José Genzing, Patro Carlinguant Liab Elan, José Liaba, Alfredo Manos, Patro Salgola, Ferando Salgola, Granado Vanderhyder, Parr Marcon, Patricio Carlinguant Liab March, Alfredo Manos, Patro Salgola, Ferando Distri, Algorido Districtione Alarcon, Ratro Carlinguant Salgola, Ferando Districtione Carlinguant Natorio Carlinguant Salgola, Ferando Districtione Carlinguant Natorio Carlinguant Natorio Carlinguant Salgola, Ferando Districtione Carlinguant Natorio Carlinguant Salgola, Ferando Districtione Carlinguant Salgola, Ferando Districtione Carlinguant Salgola, Ferando Districtione Carlinguant Salgola Salgo	0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PAO+           0           L\           RW           PAO1           L+           PAO1           L+           PAO1	PAO 0 0 RW 0 L 0 Vtn L L L L L 0 0 0 0 0 0 0 0 0 0 0 0 0	0 PAO TU+ 0 L+ 0 L+ 0 VETI TCO L VETI 0 0 0 0 0 0 0	0 PAO PAO 0 L 0 L 0 VUTI PAO L 0 PAO 0 0 0	0 PAO PAO 0 L 0 L 0 PAO VLTI L 0	0 PAO PAO 0 L 0 L 0 PAO VITI L	TU+ PAO PAO TU+ L TU+ L 0 PAO	PAO PAO\ PAO PAO L\ TCO	PA0 0 PA0 PA0 0 TC0	PAO 0 PAO PAO	PAO PAO 0 PAOTU\ PAO	PA0 0	PAO 0				PAO\				TU+	PAO	PAO		PA0 0 L\	PA0 0 0	PA0 0 0
Rarrey, Christian Senth, Grando Wata, Jorge Ces, Veter Avany, Nector Bass, Jose Carlignant, Luis Carlignant, Luis Carlignant, Luis Carlignant, Luis Carlignant, Luis Monto, Fancol Piquinan, Jorge Rojan, Faccol Sajado, Fenando Muno, Fancol Sajado, Fenando Caralino, Janico Carlino, Mando Sajado, Fenando Caralino, Janico Carlino, Mando Carlino, Mando Caralino, Sanado Figuena, Jose Figuena, Jose Figuena, Jose Figuena, Jose	0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PAO+           0           L\           RW           PAO1           L+           PAO1           L+           PAO1	PAO 0 0 RW 0 L 0 Vtn L L L L L 0 0 0 0 0 0 0 0 0 0 0 0 0	PAO TU+ 0 L+ 0 L U U U U U U U U U U U U U U U U U U	PAO PAO 0 L 0 L 0 VUTI PAO L 0 PAO 0 0 0	PAO PAO 0 L 0 L 0 PAO PAO VUTI L 0	PAO PAO 0 L 0 L 0 PAO VUTI L	PAO PAO TU+ L TU+ L 0 PAO	PAO\ PAO PAO L\ TCO	0 PAO PAO 0 TCO	0 PAD PAD	0 PAOTU\ PAO	0	0		PAOTU	0				0					0	0	0
Senth, Gausdo Viata, Jorge Cito, Victori Marro, Nicciola F Barro, Anto Carligaante, Luito Carligaante, Luito Carligaante, Luito Carligaante, Luito Carligaante, Luito Carligaante, Luito Carligaante, Luito Carligaante, Luito Salgado, Fernando Salgado, Fernando Vasaderhinyteen, Parce Natardin, Patroco Carcano, Julato Dansis, Reindelo Piguerao, Xore Piguerao, Xore Piguerao, Xore	0 L L PAO 0 PAO 0 0 0 PAO PAO PAO 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 L\ RW PAO\ L+ PAO\ VIETH PAO+ L+ L+ L VIETH PAO+ PAO+ L+ L PAO+ PAO+ L+ L 0 PAO\ PAO\ PAO DAO+	0 0 RW 0 L 0 Vtn L L L L 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	TU+ 0 L+ 0 VET 1 0 VET 1 0 0 0 0 0	PAO 0 L 0 L 0 VCTI PAO 0 PAO 0 0 0	PAO 0 L 0 L 0 PAO VIII L 0	PAO 0 L 0 L 0 PAO VITI L	PAO TU+ L U+ L 0 PAO	PAO PAO L\ TCO	PAO PAO 0 TCO	PAD PAD	PAO	0		0				0					0	0			0
Wata, torgen Ces, Vetter Avaver, Neccles Bara, Jose Caregoarta, Case Caregoarta, Lois Caregoarta, Lois Caregoarta, Lois Caregoarta, Lois Caregoarta, Lois Caregoarta, Lois Caregoarta, Lois Caregoarta, Lois Huanz, Nordega Huanz, Nachodga Huanz, Nachodga Huanz, Nachodga Nunzer, Partos Caregoarta, Janos Caregoarta, Janos	L L PAO 0 PAO PAO PAO PAO PAO PAO PAO PAO	L\ RW PAG\ L+ PAG\ L+ VLTH PAG+ L+ L L L L L L PAG PAG PAG PAG PAG D PAG D PAG D PAG D PAG D PAG D D PAG D D PAG D D D D D D D D D D D D D D D D D D D	0 RW 0 L 0 VLTI 1 CO L L 0 0 0 0 L 0	0 L+ 0 VETI TCO L L VSTM 0 0 0	0 L 0 VUTI PAO L 0 PAO 0 0 0	0 L 0 L 0 PAO VUT L 0	0 L 0 PAO VII L	TU+ L TU+ L 0 PAO	PAO L\ TCO	PAO 0 TCO		PAO				-L	L	L	L	PA0+	PAO	PA0						
Ces Veter Avarer, Neccios F Bara, Jose Campan, Petro Campan, Petro Campan, Petro Campan, Petro Campan, Petro Campan, Cesar Bara, Chama Hourt, Rodrigo Manon, Paricio Valadimiyeto, Yana Alaron, Paricio Valadimiyeto, Yana Alaron, Paricio Carcano, Ruber Dobert, Alenado Engenes, Jose Flores, Relado	PAO 0 PAO 0 0 PAO PAO PAO PAO PAO PAO PAO 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RW           PAQ1           L+           PAQ1           VIETH           PAQ1           VETH           VETH           VETH           VETH           PAQ1           PAQ2           D           O           D           O           TU+L	RW 0 L 0 VIII TC0 L L U VSTM 0 0 0 L 0	L+ 0 V211 TCO L L V5TM 0 0 0 0	L 0 VCTI PACO L 0 PACO 0 0 0	L 0 L 0 PAO VUT L 0	L 0 PAO VIII L	L TU+ L 0 PAO	L\ TCO	0 TCO					0	0	PAO+	0	L+ 0	L	L	L	L	L	L			
Avare, Nicolas B Basa, Jose Campana, Petro J Campante, Luis Carlenas, Cesar Billo, Cristian Hotta, Rodige D Lieka, Alfredo Minano, Patricio Pilquinas, Jorge Pilquinas, Jorge Pilquinas, Jorge Rojan, Patrado Vanderhiyden, Pierre Alexon, Patricio Carcano, Ruben Dobert, Alegardo D Donsos, Ranado Figueno, Jose Figueno, Stato	PAO 0 PAO 0 0 PAO PAO PAO PAO PAO PAO PAO 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	PAO\ L+ PAO\ VUTH L+ L VUTH D PAO+ L+ D PAO PAO PAO L+ 0 PAO L+ 0 PAO TU+L	0 L 0 VITI TCO L L L VSTM 0 0 0 0 0 0 L 0	0 L 0 VITI TCO L L VSTM 0 0 0 0	L 0 VUTI PAO L 0 PAO 0 0	L 0 PAO VLTI L 0	L O PAO VUTI L	TU+ L 0 PAO		TCO		0	0	PAO		PADIU	0	0	COE	0	0	TU+ PoC	PAO	PAO	PA0	PAO	0	0
Bara, Jose Campana, Pedro J Canganan, Pedro J Canganas, Cesar Biao, Cristian Horta, Rodrigo P Leiva, Alfredo Piliquinao, Jonge Palja, Paricio Piliquinao, Jonge Alarcon, Patricio Cangano, Ruben Doberti, Algundro, Patricio Donoso, Ruben Doberti, Algundro Figueroa, Jose Figueroa, Jose Figueroa, Jose	0 PAO 0 0 0 Ad\ 0 PAO PAO PAO 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	L+ PAC\ VITH PAC+ L+ L VITH D PAC+ L+ D PAC\ PAC\ PAC D TU+L	L 0 VLTI TCO L L VSTM 0 0 0 0 0 0 0 1 0	L 0 VITI TCO L L VSTM 0 0 0	L 0 VUTI PAO L 0 PAO 0 0	L 0 PAO VLTI L 0	L O PAO VUTI L	L 0 PAO				PAO	240	PAG	0 PAO	PAOTUA	Fx	0	0	0	0	TU+	PAOTU\ VUTI	VUT	VLTI	VLTI	Pac	0
Campona, Pedro B Campona, Pedro B Cangano, Cesar Tillo, Cristian Huerta, Rodrigo D Leiva, Alfedo Munoz, Patricio Plaguina, Jonge P Rojas, Pascual Salgado, Fermando Vanderhayden, Pierre Alarcon, Patricio Carcano, Ruben Dobsett, Algandro E Donsos, Ruben Donsos, Ruben Donsos, Ruben	PAO 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	PAO\ VITH PAO+ L+ L VSTM+ 0 PAO\ PAO\ PAO\ L+ 0 0 TU+L	VLTI 1CO L L VSTM 0 0 0 1 0 1 0	VLTI L L VSTM 0 0 0	VUTI PAO L 0 PAO 0 0	PAO VLTI L 0	PAO VIII	PAO		0	0	0	0	0	0	L+	1		1	1	1	104	IV.	0	0	0	0	0
Cardmay, Cesar Diao, Cristian Horta, Rodrigo P Leivia, Alfredo Munoz, Patricio Pitguinoa, Jorge P Rojan, Patricio Salgado, Francolo Vanderhryden, Pierre Alarcon, Patricio Carcano, Ruben Doberti, Algandro Figuenoa, Jose Figuenoa, Steiniado Figuenoa, Stra	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	L+ L VSTM+ 0 PAQ\ PAQ\ PAG\ L+ 0 0 TU+L	L L VSTM 0 0 0 0 0 L 0	L L VSTM 0 0	PAO L 0 PAO 0 0	VIITI L O	vin L			1	1	1	PAOr	PMO.	UTL	PAO\	0	0	0	0	0	0	UT2+	vm.	UTA	una	240	PMO.
Illio, Cristian Horta, Rodrigo P Laiva, Alfredo Munca, Parisio Pilquinao, Jorge Bajas, Parisio Pilquinao, Jorge Salgado, Frando Vanderhryden, Pierre Alarcon, Pabricio Carcano, Ruben Doberti, Algandro Donesso, Ruben Geneso, Sale	0 PAO PAO PAO PAO PAO 0 0 0 0 PAC	L+ L VSTM+ 0 PAQ\ PAQ\ PAG\ L+ 0 0 TU+L	L USTM 0 0 0 0 0 L 0	L L VSTM 0 0 0	L 0 PAO 0 0	L 0	L		PAO\	0	0	0	0	0	0	PA0+	PAO	PAO	PAO	VUT	VLTI	VLTI	PAO\	0	0	0	0	0
H loets, Bodrigo P Lokia, Alfredo Minola, Patricio Piliquinao, torge Roja, Paccual P Salgado, Fernando Vandershyden, Pierre Alarcon, Patricio Carcamo, Ruben Doberti, Algandro Donoso, Risinado Figueno, Jose Filores, Isto	PAO 0 PAO PAO 0 0 0 0 0 PAC	L VSTM+ D PAQ\	L 0 0 0 0 0 L 0	L VSTM 0 0	0 PAO 0	0			PAOL	0	0	0	0	0	0	TCO+				PAO	PAO	PAO	PAOL	0	0	0	0	0
Leiva, Alfredo Munoz, Patricio Pilipuina, Ionge P Rojan, Patricio Salgado, Fernando Vanderheyden, Pierre Alarcon, Patricio Carcamo, Ruben Dobert, Alegendro Dobert, Alegendro Figueroa, Jose Figueroa, Jose Figueroa, Jose	0 0 PAO PAO 0 0 0 0 PaC	0 PAG\ PAG\ PAG\ L+ 0 0 TU+L	0 0 0 0 L	0 0 0	PA0 0			L	L)	0	0	0	0	0	0	L+	L	L	L	L	L	L	L)	0	0	0	0	0
Munoz, Patricio Piliquinao, iorgo Rojas, Pascual Salgado, Fernando Vanderhryden, Pierre X Alarcon, Patricio Carcamo, Ruben Doberti, Akejandro Donoso, Istinaldo Figueroa, Jose Piores, Erito	0 PAO PAO 0 0 0 0 0 0 0 0	0 PAG\ PAG\ PAG\ L+ 0 0 TU+L	0 0 0 0 L	0 0 0	0		0	0	0	0	PAO+	PAO	VLTI	VITI	VUT	VLTI	PAO	PAO\	0	0	0	0	0	0	PA0+	PAO	VLTI	VIII
Pilquinas, Jorge P Rojas, Paccal P Salgado, Fomando Vanderheyden, Pierre Alarcon, Patricio Carcano, Ruben Dobetti, Alejandro Donoso, Reinaldo Figueroa, Jose P Piores, Erito	PAO PAO O O O O O Pac	PAG\ PAG\ PAG\ L+ 0 0 TU+L	0 0 0 L	0	0	0	100	TCO	PAO\	0	0	0	0	0	0	PAO+	PAO	VSTM	VSTM	PAO	0	UT4	PAO\	0	0	0	0	0
Rojas, Pascual F Salgado, Fernando V Vanderheyden, Pierre Alarcon, Patricio Carcano, Ruben Doberti, Alejandro Donaso, Reinaldo Figueroa, Jose Fiores, Erito	PAO PoC 0 0 0 0 PoC	PAG\ PAG\ L+ 0 0 TU+L	0 0 L 0	0		0	0	0	L+	L	L	PAO	PAO	PAO	PAO	E\ PAQ\	0	0	0	0	0	0	L+ PAO+	PAO	PAD	E PAO		L
Salgado, Fernando Vanderheyden, Pierre X Alarcon, Patricio Carcano, Ruben Doberti, Alejandro Donaso, Reinado Figueroa, Jose Fiores, Ento	PoC 0 0 0 0 PoC	PeK1 L+ 0 0 TU+L	0 L 0		0	0	0	0	PAOr	PAO	PAO	1/T2	1073	100	100	PAO	0	0	0	0	0	0	107.64	UTA	UT4	UT4	PAO	PAO
Vanderheyden, Pierre x Alarcon, Patricio Carcamo, Ruben Doberti, Alejandro Donoso, Reinaido Figueroa, Jose Fiores, Erito	0 0 0 PaC	0 0 TU+L	L 0		0	0	0	0	VLTI+	VUTI	VIT	VIT	8.4	But	Bat	PeCl	0	0	0	0	0	0	L+	L	L		1110	L
Alarcon, Patricio Carcano, Ruben Doberti, Alejandro Donoso, Reinaldo Figueroa, Jose P Fiores, Erito	0 PaC	0 TU+L		1	L	L	L	1	1/	0	0	0		0	0	PAO+	240	240	PAG	VSTM	VSTM	VSTM	PAO	0	0	0	0	0
Carcamo, Ruben Doberti, Alejandro Donoso, Reinaldo Figueroa, Jose Fiores, Erito	0 PaC	TU+L		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Doberti, Alejandro Donoso, Reinaldo Figueroa, Jose Fiores, Erito	PuC		0	TU+	PAO	PAO	PAO	PAO	PAO	PAO	PAO	PAOTU\	0	0	0	0	0	TU+	PAO	PAO	PAO	PAO	PAO	PAO		PAOTU\	0	0
Donoso, Reinaldo Figueroa, Jose Fiores, Erito			PAO	UTL		071	PAO		PAOTU\	0	0	0	0	0	TU+	PAO	PAO	UT2	UT2	UT2	UT2		PAOTU\	0	0	0	0	0
Figueroa, Jose Fiores, Erito		PAOTU	0	0	0	0	0	0	0	0	TU+	PAD	P <i>N</i> O	PAO	UT4	UT4			PAOTU	0	0	0	0	0	TU+	PAO	PAO	PAO
Flores, Erito		TU+L	UT2	UT2	UTZ		PAD		PAOTU\	0	0	0	0	0	TU+	UTA	011	UTL	PAO	PAO	PAD		PAOTU\	0	0	0	0	0
	0	PAO\ TU+L	0 PAO	0	0	0	0	0	PAOTUA	0	PAO+	PAO	PAO	PAO	PAO TU+	PAO\ PAO	0	0	0	0	0	0	PAD+ PAOTU\	PAO	PA0 0	PAO	PAO	PAO
	0	TU+L	PAO	PAO	PAO	0	0	014	0	0	0	PAO+	240	0	10+	PAD	VITTA	PAO	PAO\	0	0	0	0	0	0	PAO+	100	0
	0	100		TU-L	PAO	PAO	240		PAOTU/	0	0	0	0	0	TU+	240	240	PAO	PAO	PAO	PAO	240	PAOTU/	0	0	0	0	0
	0	0	0	0	1.*	L	L		L	L	L	L\	0	0	0	0	0	0	1.1	L	L.	L	L	L	L	L)	0	0
Mellado, Angel	UT4	PAOTU	0	0	0	0	0	TU+	PAO	PAO	PAO	UT4	UT4	UT4	PAO	PAOTU	0	0	0	0	0	0	L+	L	L	L	L	L
	0				PAO	PAO	PAO	PAO	PAO\	0	0	0	0	0	0	PA0+	PAO	PAO	PAO	PAO	UTS	UTS	PAO	0	0	0	0	0
		PAOTU\	0	0	٥	0	0	0	0	0	0	L+	L	L	L	L	L	L	L)	0	0	0	0	0	TU+	PAD	PAO	PAO
	0	0	PAO+	PAO	PAO	PAO	PAO	PAO	PA0 PA0+	PAO\ PAO	0 UT2	0	0	0	0 PAO	0	PAO+	PAO	PAO	PAO	PAO	PAO	PAO	PAO\	0	0	0	0 PAG
	NTM I	PA0\ PA0\	0	0	0	0	0	0	PAO+ PAO+	PAO	012	012	012	012	PAO	PAO\ PAO\	0	0	0	0	0	0	PA0+	PAG	UT2	1/72	UTZ	UTZ
	U72	UT2	240	240	PAOTUA	0	0	0	0	0	TU+	240	240	PAO		1112	1/12		PAOTUA	0	0	0	0	0	Tile	PAD	240	PMO
	0	0	0		PoC	PoC	UT2	UT2	UT2	UT2	PoC	0	0	0	0	0	0		PoC	PoC	PoC	COE	CO6	CO6	PoCL	0	0	0
	0	0	0	0			PAO	PAO	PAO	PAO		PAO\	0	0	0	0	0	0	PoC+	PoC	PoC	PoC	PeC		PoC	PoC)	0	0
Abadie, Sergio	0		PAO	PAO	VSTM	VSTM	VSTM	VSTM	PAO\	0	0	0	0	0	0	L+	L	L	L	L	L	L	U)	0	0	0	0	0
	740\	L	0	0	0	0	0	0	0	L+	L	L	L	L	L	L	L\	0	0	0	0	0	0	PAO+	PAD	PAD	PAO	PAO
	0	PaCe	PoC	PoC	PaC	PAO	PAD	PAO	PAO\	0	0	0	0	0	0	PAO+			PAO				PAO	0	0	0	0	0
Beltran, Juan Bunout, Pablo	0	L+	L 0	L	PAO+	PAO	PAO	PAD	L\ PAD	0 PAO	0 PAO	0 PAO	0	0	TU+	PAO	vun	VLTI	VUTI PAO+	PAO	PAO	PAO	PAOTU\ PAO	0 PAO	0 PAO	0 PAO	0	0
	0	14		0	1	PAD	PAD	PAD	L	0	0	PAD	0	0	0	1000	100	100	PRO+	PAO	PAD	PAD	PAO	0	0	0	0	0
	PAO	PAO\	0	0	0	9	51	51	1	1	PAGe	TCO	100	PAO	PAO	PAO\	0	0	0	0	0	0	PAOr	PAO	102	100	UT4	UT4
		PeC)	0	0	0	0	0	0	PAO+	PAO	PAO	PAO	PAO		PAO	P40\	0	0	0	0	0	0	PAO+	PAO	PAO	PAO	PAO	PA0
Guajardo, Patricia	L.	L	0	0	0	0	0	0				PoC	PeC	PoC	PoC		0	0	0	0	0	0	L+	L	L	L	L	L.
	PAO	PAO\	L	L	0	0	0	0	0	0	L+	L	L	L	L	L	L	U\	0	0	0	0	0	0	PAO+	PoC	PeC	PeC
	0	0	0	PAO+	PAO	PAO	UTL	UTL	UT1	UT1	PAO\	0	0	0	0	0	0	L+	L	L	L	L	L	L	٤١	0	0	0
Riquelme, Miguel Rojas, Chester	PAO	PA0\	L	L	0	0	0	0	L+ PAO+		L	PAO	VSTM	VITM	VSTM	L\ PAQ	0	0	0	0	0	0	L+ PAO+	PAO	L 200	L	L	L
	0	0	0	PAO\	Barta.	-	-	-	106	PAO	PAO	PaC	0	0	0	10401	0	0	PAO+	PAO	PAO	UT2	1/12	1/12	PAD	PAO\	0	0
Zambrano, Victor	0	0	0	. 0	8VIT	PAO+	PAQ	PAQ	PAQ	240	PAO	PAOTU	0	0	0	0	0	TU+	PAQ	PAQ	PAO	PAO	PAO		PAO	PAOTU	0	
	0	PaCe	COK	COE	COE	PoC	PoC	Pot	PoC)	0	0	0	0	0	0	0	0	PoC+	Pac	PoC	PoC	PoC	OSS	055	Perch	0	0	0
	0	Fx	Fx						PAO\	0	0	0	0	0	0	PA0+	240						PAO	0	0	0	0	0
		PAO\	0	0	0	0	0	0	PAD+	PAO	PAD	PAD	PAO	055	055	PAG	0	0	0	0	0	0	L+	L	L	L	L	L
	0	L+	Ł	- L	L	L	L	L	L\	0	0	0	0	0	0	Fx	PAO+	PAO	PAO	PAO	OSS	OSS	PAO	0	0	0	0	0
Bungos, Pablo		L+	ι	L	ι	L	L	L	L)	0	0	0	0	0	0	L+	L	L	L	L	L	L	U\	0	0	0	0	0
			PAO	PAO\	0	0	0	0	0	0	0	0	0	0	Fx	055+	055	Pac	PAO	PAO	PAO	PAO	PAO	PAO	PaC	PoC	PoC\	0
Gil, Juan Pablo	PaC			TU+ PAO+	PAO	PAO PAO	CSS	CSS	PAOL	055	0	PAOTU 0	0	0	0	D PAO+	0	0	L+ PAO	PAO	PAO	PAO	PAO\	L 0	L 0	L\ 0	0	0
Gil, Juan Pablo	PaC	0			0	0	0	0	PAO+	PMO	PAO	840	240	PAG	PAO	PA0+	0							PAO	0	0	055	PAO
Gil, Juan Pablo Herrera, Cristian Lizana, Vicente	0 0	Fx	Fx 0			L	ĩ	1	IX	0	0	0															0	0
Gil, Juan Pablo Herrera, Cristian Lizana, Vicente Miranda, Nicolas	PaC		Fx 0 L	0	L		PAO	PAG	PAO				0	0	0	PAO+	240	0	0	0	0	0	PAO+ PAO	0	0	0		
Gil, Juan Pablo Herrera, Cristian Lizana, Vicente Miranda, Nicolas Munoz, Ivan	Pac 0 0 PAO	Fx PAO\			L TCO	TCO				0	0	0	0	0								0 PAO TCO			0	0	0	0
Gil, Juan Pablo Herrera, Cristian Lizana, Vicente Miranda, Nicolas Pena, Eduardo Sandrock, Stefan	Pac 0 0 PAO 0 0 0	Fx PAO\ L+	0 L 055 0	0 L PAO 0	L 100	100 0	0	0	0	0		0	0		0	PA0+	PAO PAO 0	055				PA0 100	PAOL	0 0 0	0	0	0	
Gil, Juan Pablo Herreta, Cristian Lizana, Vicente Miranda, Nicolas Munoz, Ivan Pena, Eduardo Sandrock, Stefan Schmutter, Ricardo	PaiC 0 PAO 0 0 0 0 0	Fx PA(0) L+ 055+ 0 PA(0)	0 L 055 0 0	0 L PAO 0 0	0	0	0	0	0 PaCr		0	0	0	0	0	PAO+ PAO+ 0 PeC)	PAO PAO 0	055 PAO 0 0	0 0	055 0114 0	PAD 100 0	PAO 100 0	PAD\ PAD\ 0 PAO+	0 0 0 PAO	0 0 PAO	0 0 PAO	0 0 PAO	0 0 PA0
Gil, Juan Pablo Gil, Juan Pablo Gil, Juan Pablo Gil, Juan Pablo Gila Miranda, Nicolas Minora, Nan Pena, Eduardo Sandrock, Stefan Schmutzer, Ricado Urrutia, Josefina P. Urrutia, Josefina P.	PaC 0 0 PAO 0 0 0 0 0 0 0 0	Fx PAO\ L+ 055+	0 L 055 0	0 L PAO 0			0	0	0	0	0	0	0	0	0 0 0	PAO+ PAO+ 0	PAO PAO 0	OSS PAO 0	CGSS UT4 0	055	PAD 100	PA0 100	PAD\ PAD\ 0	0 0 0	0	0	0	0

Source: 'Op Roles' sheet, from P112.xlsx



#### **MSE Ops Role Assignation**

User interface with Streamlit





#### Pretty Print the Results 🞻

Select a	month to format		Describe sheet n	ame to read	
			+ Op Roles		
Upload y	our PXXX excel file for pr	etty print (.xlsx)			
€	Drag and drop file				Browse files
D	P112 MSE 1.xlsx 1.	9MB			>
	P12000000	2023-10-01 00:00:00	2023-10-02 00:00:00	2023-10-03 00:00:00	2023-10-04 0
	Boccas, Maxime				
	Acuna, Andrea		8ANF	8ANF	8ANF
	Sansgasset, Pierre	PAO\			
	Blanchard, Guillaume				
	Aguilera, Gregorio	PAO\			
	Bolados, Carlos		TU+	VSTM	VSTM
	Bourget, Pierre	PoC	PoC	PoC\	
	Dauvin, Louise	PAO	PAO	PAO\	
	Dubost, Nicolas		PAO+	PAO	PAO
	Gonzalez, Jaime	PAO	0	0	0

V Column name "P12000000" matches the pattern of the Op Roles sheet format. The period file from which is obtain the staff member column is P112 MSE 1.xlsx.

V The last row of the excel contains a staff member name: Del Rosario, Andrea . However, ensure that this name is the last one in the staff member list.

V The selected month 1 is within the available months in the P12000000 file.

#### Download the formatted file Copy/Paste 📝

onwload the pretty print as an excel file	Enginee

n Engineer - COE	
	Blanchard, Guill
	Kastinen, Ismo
	Gonzalez, Sergio
	Valenzuela, Javi
	Boccas, Maxime
	Blanchard, Guill
	Cea, Victor
	Tapia, Mario
	Boccas, Maxime
	Cea, Victor

#### **PSW Scheduling Tool**



Collaborate and Test

А	В	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD
																M	ar-	24															
	Software	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	01
IKA	Kastinen, Ismo		PAO	PAO	PAO	PAO	PAO	PAO\							PAO+	PAO	PAO	PAO	PAO	PAO	PAO	PAO	PAO	PAO	PAO	PAO\			1000				
SAE	Aedo, Sebastián	ihq			GHQ	GHQ	GHQ		GHQ	-			L+	L	L	trav	L	L		L							PAO+	PAO	OSS	OSS	OSS	PAO	PAO
JPA	Araneda, Juan Pablo Baksai, Pedro				-	PAO+	OSS	OSS	PAO	PAO	PAO	PAO	PAO				-				PAO	PAO	PAO	PAO	PAO	PAO	PAO\	-	-		-		-
PBA PBU	Baksai, Pedro Burgos, Pablo		PAO PAO	PAO PAO	PAO	PAO\ PAO\	-		PAO+	PAO	PAO	PAO	OSS+ PAO	PAO	OSS PAO	PAO	PAO	PAO	PAO	PAO\		-	<u> </u>	-	-		PAO+ OSS+		PAO PAO				PAO
JPG	Gil. Juan Pablo	/55	PAU	PAU	PAU	Fx	PAO+	PAO	PAOF	PAO	PAO	PAO	PAO	PAU	PAU	PAU				PAO+	PAO	PAO	PAO	PAO	PAO	OSS	PAO\	055	PAU	PAU	PAU	PAU	PAU
CHE	Herrera, Christian	AO	PAO	PAO	OSS	OSS	PAO		PAOTU		T AG	T AG	TACI	-	TU+	PAO	PAO	PAO	PAO	PAO	PAO	PAO	PAOTU	IAU	2	2	2	2	2	2	2	2	2
VLI	Lizana, Vicente					GHQ	GHQ		GHQ				L+	L	L	L	L	L		L							L+	L	L	L	L	L	L
NMI	Miranda, Nicolas					PAO+	PAO	PAO	OSS	OSS	PAO	PAO	PAO\							PAO+	PAO	PAO	PAO	PAO	PAO	PAO	PAO\						
IMU	Munoz, Ivan		OSS	OSS	PAO	PAO									PAO		OSS			PAO							PAO+		PAO				PAO
EPE	Pena, Eduardo Sunurock, Stejun	<u>'AO</u>	PAO	PAO	PAO	PAO\	_						PAO+	PAO	PAO	PAO	PAO	OSS	OSS	PAO\							PAO+	PAO	PAO	PAO	PAO	OSS	OSS
RSC	Schmutzer, Ricardo					PAO+	PAO	PAO	PAO	PAO	PAO	PAO	PAO\	-						OSS+	OSS	OSS	PAO	PAO	PAO	PAO	PAO\	-					_
JUR	Urrutia, Josefina	-				PAO+	PAO		PAO	PAO	OSS		PAO							PAO+	PAO	PAO	PAO	PAO	PAO	PAO	PAO						
GVA	Valdes, Guillermo	ihq				L+	L	L	L	L	L	L	L\	trav						PAO+	PAO	PAO	OSS	OSS	OSS	PAO	PAO\						
	Janurock, Steran																			-													
	Schmutzer, Ricardo																																<u> </u>
	Urrutia, Josefina																																(
	Valdes, Guillermo																																
-	TTRs / Activities		63							00.																6v							_
IMU GV/	112.0009 UT4 Nasmyth B Adapter Ro					1	1															1											
IKA	112.0011 ASM VLTSW upgrade: wasr																		IKA(12)	IKA(12)	IKA(12)	IKA(12)	IKA(12)	IKA(12)	IKA(12)								
JPG	112.0012 Alignment of all modules in																																1
JPG	112.0013 GRAVITY upgrade to VLTSW		1											1											1	1							
	112.0014 Linux RMN recorder commi							1																									
	112.0015 HAWKI upgrade to VLT2022		1		1		1	1	1	1												1		1	1		1	1	1	1			
	112.0016 SPHERE upgrade to VLT20						1	1		1												+		1	1	1			1	1			*****
	112.0017 UT4 M1/M3 recoating			X(1)	X(1)	X(1)	X(1)	X(1)	X(1)	X(1)	X(1)	X(1)	X(1)	X(1)	X(1)	X(1)	X(1)	X(1)	X(1)	X(1)	X(1)	X(1)	X(1)					+					
	112.0018 GALACSI RTC BOX Science V			V(1)	×(1)	A(1)	N(1)	N(1)	×(1)	×(1)	A(1)	X(1)	×(1)	A(1)	X(1)	X(1)	×(1)	×(1)	X(1)	V(1)	A(1)	V(1)	A(1)										
								-																-			-						·
	112.0019 ESPRESSO upgrade to VLTS				-																					<u> </u>						ļ	
	112.0020 NAOMI upgrade VLTSW 20:								ļ																	ļ						ļ	
	112.0021 Implementation and testing		ļ	L	-			1	1		1	ļ											ļ							1	-	ļ	
oss	112.0022 ERIS AO Improvements								L		1																						
(blank)	112.0023 Functional verification and																									X(3)							(
JPG PBU	112.0025 GRAVITY+: October commis		1				1	1		1																							1
JPG PBU	112.0026 GRAVITY+: March commiss		1		1	1	1	1	1	1	]			1					X(1)	JPG(1)	JPG(1)	JPG(1)	JPG(1)					1	1	1			
GVA	112.0027 4LGSF Maintenance 2023		1	1			1	1	1	1	1			1		1		1	1					1					1	1			
			1	+	t	+	1	ł	ł	+		<del> </del>	<u> </u>	+		1		+	ł			+	t			+	ł	+	1	1	ł		





□ The sunset at the platform

#### ÷.

- □ Volleyball 🏐!
- 🗅 🛛 Mind 🧘 & body 🏋
- □ The desert ♥ and dessert

   !
- The nostalgic short dose
   when you arrive at the airport

#### \*

- Thanks to PSW! and JPG for being excellent advisors!
- And everyone I know and shared moments with, there was a pleasure!

#### **Internship Memoirs**



An excellent and lovely group of people



Practicing jump serve with Nico!



Me visiting the ELT (thanks Matteo!)



## Thank you!



Engineering with prompts, rather than prompt engineering

Cristóbal Alcázar MSc in Finance & (not yet) MSc in Data Science