EuroMoE-2.6B-A0.6B: Technical Report

Duarte M. Alves[1,2] **Miguel Moura Ramos**[1,2] **Hippolyte Gisserot-Boukhlef**[3,8]
João Alves[Ψ4] **Pedro Henrique Martins**[Ψ7] **Patrick Fernandes**[1,2,5]
José Pombal[Ψ1,2,7] **Nuno M. Guerreiro**[Ψ7] **Ricardo Rei**[Ψ7] **Amin Farajian**[Ψ9]
José G. C. de Souza[Ψ6] **Pierre Colombo**[3] **André F. T. Martins**[Ψ1,2,9]

[1] Instituto Superior Técnico & Universidade de Lisboa (Lisbon ELLIS Unit)
[2] Instituto de Telecomunicações [3] MICS, CentraleSupélec, Université Paris-Saclay
[4] Acolad [5] Carnegie Mellon University [6] OutSystems [7] Sword Health
[8] Artefact Research Center [9] TransPerfect

Abstract

This report introduces EuroMoE-2.6B-A0.6B, a mixture of experts language model trained from scratch to serve European users by supporting all 24 official European Union languages, along with 11 additional languages. EuroMoE directly addresses the under-representation of European languages in existing open large language models. We present a detailed report of the model's development, including initial upcycling experiments that indicate that, under larger token budgets, training from scratch is preferable to upcycling. EuroMoE-2.6B-A0.6B demonstrates strong performance across a range of multilingual benchmarks covering general knowledge, instruction following, reasoning, and translation. To facilitate future research, we release both the pre-trained and post-trained models, as well as the full pre-training codebase.[1]

1 Introduction

Despite rapid advances in language modeling (Llama Team et al., 2024; DeepSeek-AI et al., 2025; Yang et al., 2025), most state-of-the-art models remain closed (Anthropic, 2023; OpenAI et al., 2024; Comanici et al., 2025). Moreover, existing open models typically allocate the majority of their capacity to English or a small set of high-resource languages (Olmo et al., 2025). Consequently, many European languages are still weakly supported in the current open-model ecosystem (Rehm & Way, 2023), and only a limited number of large language models have actually been developed in Europe (BigScience et al., 2022; Jiang et al., 2024; Gonzalez-Agirre et al., 2025; Hernández-Cano et al., 2025).

The EuroLLM project aims to close this gap by developing open models that natively handle all 24 official European Union (EU) languages, strengthening the multilingual AI ecosystem in the EU. The project has already released a family of dense models, EuroLLM-1.7B (Martins et al., 2024), EuroLLM-9B (Martins et al., 2025) and EuroLLM-22B (Ramos et al., 2026), which deliver strong multilingual performance and competitive translation quality when compared to existing alternatives.

Given the recent successes of sparse mixture-of-expert architecture (Shazeer et al., 2017; Fedus et al., 2022), we introduce EuroMoE-2.6B-A0.6B, a small and efficient Mixture-of-Experts (MoE) architecture designed to explore the potential of sparsity for multilingual workloads. For this project, we performed several experiments on upcycling (Komatsuzaki et al., 2023) a smaller version of EuroLLM, revealing several important factors when initializing a sparse model from a dense one. Similar to Muennighoff et al. (2025), however, our results show that, at larger token budgets, upcycling leads to worse performance than training the model from scratch, motivating us to to adopt this choice for EuroMoE-2.6B-A0.6B. Our final model achieves a significant improvement over EuroLLM-1.7B, offering an improved multilingual model for memory constrained scenarios.

Alongside this report, we release the instruction following model EuroMoE-2.6B-A0.6B, the base model EuroMoE-2.6B-A0.6B-Base, and the fork of Megatron-LM (Shoeybi et al., 2019) we used for pre-training.[2]

Ψ work done while working at Unbabel.

[1] The model is available on the HuggingFace portal as part of the EuroLLM Collection.

[2] https://github.com/deep-spin/Megatron-LM-pretrain.

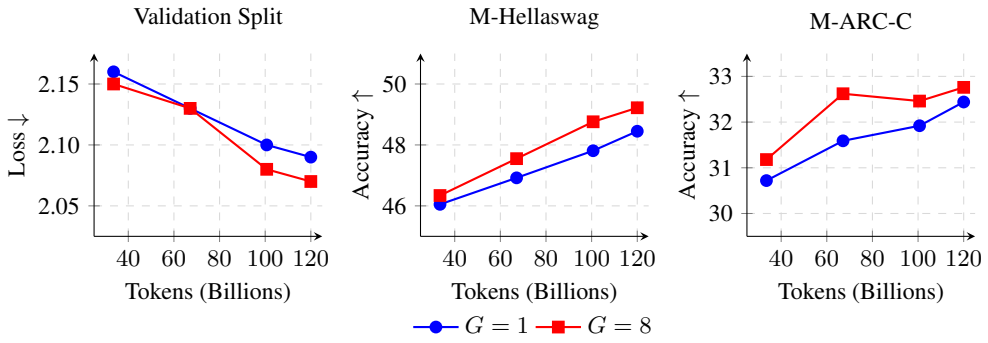


Figure 1: **Upcycling benefits from higher expert granularity.** Validation loss (left) and multilingual Hellaswag and ARC-Challenge accuracies (middle, right) show consistent gains from higher expert granularity.

2 Upcycling Experiments

Instead of starting from a random initialization, we first explored upcycling a smaller dense model. Sparse upcycling involves initializing an MoE model from a dense one by replacing the dense layers with sparse ones, typically by creating copies of the original feed-forward, and keeping all other parameters unchanged.

We evaluated our resulting models by measuring perplexity on a held-out set of the pre-training data, and on the multilingual versions of HellaSwag (Zellers et al., 2019), ARC-C (Clark et al., 2018).

2.1 What granularity should be adopted?

Given the promising results of fine-grained MoEs (Dai et al., 2024; Ludziejewski et al., 2024; DeepSeek-AI et al., 2025; Yang et al., 2025), researchers have begun adopting increasingly granular approaches when upcycling dense models. Rather than simply copying the feed-forward, recent methods shard it and shuffle its parameters to introduce diversity across experts (Muennighoff et al., 2025).

However, the benefits of this strategy remain uncertain, as prior work examined granularity only when initializing models from scratch. In contrast, sharding the feed-forward of an already trained model may disrupt its internal representations, raising the question of whether this remains the optimal choices. We answer this question by training upcyclied models at different granularities.

Similar to Ludziejewski et al. (2024), we characterize an upcycled architecture using three main hyperparameters. We define the granularity $G = \frac{d_{\text{ff}}}{d_{\text{expert}}}$, as the ratio between the feed-forward dimension of the dense model and the dimension of each expert. In practice, this corresponds to the number of shards into which original feed-forward is split.

We then define the active expansion rate $E_{\text{active}} = \frac{N_{\text{active}}}{N_{\text{dense}}}$, which measures the increase in active parameters relative to the dense model. Similarly, the total expansion rate $E_{\text{total}} = \frac{N_{\text{total}}}{N_{\text{dense}}}$ captures the increase in total parameters relative to the dense models.

Figure 1 compares two models with $E_{\text{active}} = 2$ and $E_{\text{total}} = 8$, one with $G = 1$ and the other with $G = 8$. We observe that, as in models initialized from scratch, higher granularity yields better results. This result reinforces the advantages of granular MoEs, leading us to adopt granular architectures in the remainder of our experiments.

2.2 What should be the initial checkpoint for upcycling?

A practical question that arises when upcycling dense models into MoEs is which checkpoint to use as the starting point. Modern training pipelines often adopt WSD-style schedulers (Hu et al., 2024), which maintain a high constant learning rate for most of training and then apply a final annealing phase over a relatively small portion of the data. Starting from the pre-annealing checkpoint avoids

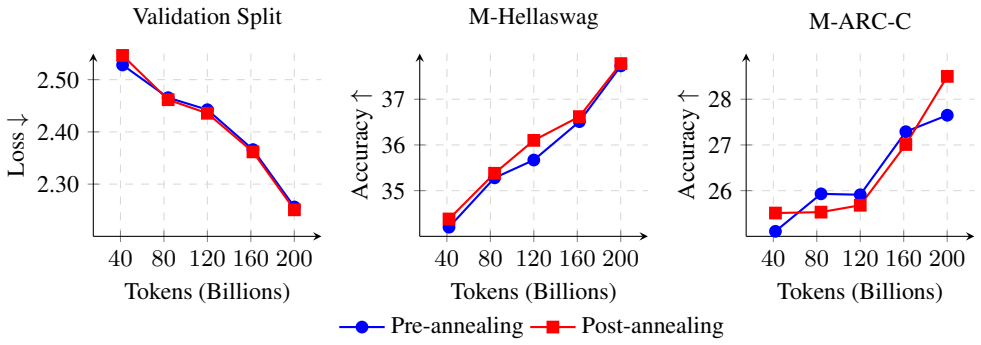


Figure 2: **Upcycling from pre- or post-annealing checkpoints yields similar results.** Validation loss (left) and multilingual Hellaswag and ARC-Challenge accuracies (middle, right) indicate comparable performance when starting from either the pre-annealing or post-annealing checkpoints.

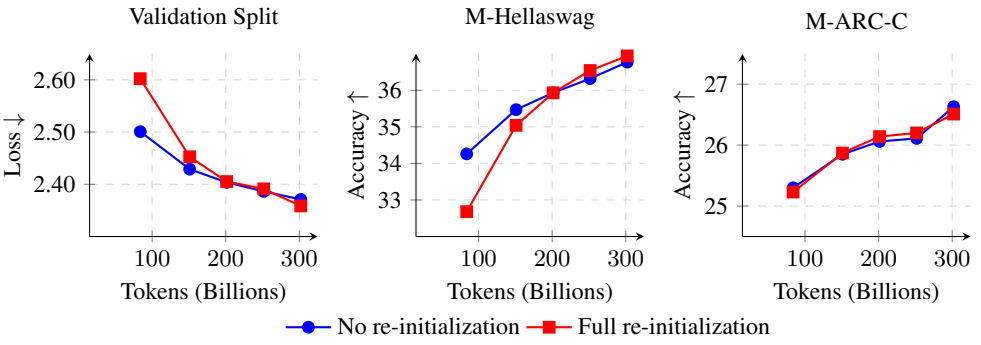


Figure 3: **Fully-reinitializing the MoE layer when upcycling improves performance.** Validation loss (left) and multilingual Hellaswag and ARC-Challenge accuracies (middle, right) favor fully re-initializing the MoE layer over retaining the dense feed-forward parameters.

repeating the annealing data and removes the need to re-warm the learning rate. In contrast, the post-annealing checkpoint has the advantage of having improved performance.

Figure 2 compares starting from the pre- and post-annealing checkpoints using the best configuration identified in the previous experiments. The differences between the two initializations are small, though the model initialized from the post-annealing checkpoint performs slightly better. Since final (post-annealing) checkpoints are generally more accessible than intermediate ones, we adopt the final checkpoint as our initialization for the remaining experiments.

2.3 Should expert parameters be re-initialized?

Another design choice in up-cycling to increase the initial diversity across experts concerns the amount of randomness reintroduced in the experts. When converting the feed-forward layer into multiple experts, parameters can be conserved or reinitialized. Reintroducing randomness may increase expert diversity, but it also risks discarding valuable representations learned by the dense model.

Figure 3 compares not re-initializing the model with re-initializing all parameters of the sparse layers. Fully re-initializing the expert parameters leads to better performance, aligning with observations that training from scratch often yields the strongest MoE models.

Therefore, based on these findings, we train EuroMoE from scratch, rather than relying on partial parameter inheritance from the dense checkpoint.

Sequence length	4,096
Number of layers	24
Embedding size	1024
Expert hidden aize	1024
Total/Active experts	64/8
Number of heads	8
Number of KV heads (GQA)	2
Activation function	SwiGLU
Position encodings	RoPE (Θ=500,000)
Layer Norm	RMSNorm
Tied embeddings	Yes
Load balancing loss	Yes ($\lambda = 0.01$)
Router z-loss	Yes ($\lambda = 0.001$)
Embedding Parameters	0.13B
LM Head Parameters	0.13B
Active Non-embedding Parameters	0.34B
Total Non-embedding Parameters	2.35B
Active Parameters	0.6B
Total Parameters	2.61B

Table 1: EuroMoE-2.6B-A0.6B hyperparameters.

3 EuroMoE

To pre-train EuroMoE-2.6B-A0.6B, we adopt the training and architectural framework of EuroLLM-22B (Ramos et al., 2026), adapting it for a sparse Mixture-of-Experts (MoE) configuration.

3.1 Pre-training

Our model follows the core architectural design choices as the rest of the EuroLLM family, grouped query attention (Ainslie et al., 2023), pre-layer normalization (Xiong et al., 2020), RMS normalization (Zhang & Sennrich, 2019), SwiGLU activation functions (Shazeer, 2020), and rotary positional embeddings (RoPE; Su et al. (2024)). However, we replace standard dense feed-forward blocks with sparse mixture-of-experts layers. We also adopt the load balancing loss aggregating estimates across micro-batches (Qiu et al., 2025), and the router z-loss (Zoph et al., 2022). Table 1 details the hyper-parameters chosen for training EuroMoE-2.6B-A0.6B.

The pre-training follows the three-phase schedule described in Ramos et al. (2026). However, despite using the same curated dataset, we extend the total training duration to 8T tokens, repeating the data in each phase twice.

3.2 Post-training

For the post-training phase, we strictly adhere to the procedure established for EuroLLM 22B (Ramos et al., 2026). We perform supervised fine-tuning (SFT) on the latest version of the EuroBlocks dataset. This dataset contains responses in all the languages covered by our model, spanning general conversation, coding, and STEM-oriented tasks.

The model is trained for 5 epochs using `bfloat16` mixed-precision, sequence packing, and a maximum context length of 32,768 tokens. Optimization follows a cosine learning rate scheduler with a peak learning rate of 1×10^{-5} and a 125-step warmup. To maximize training efficiency, we utilize the Axolotl framework integrated with Liger-Kernel (Hsu et al., 2025), providing memory-efficient, fused implementations for the cross-entropy loss, RMSNorm, RoPE, and GLU activations.

4 Evaluation

We compare our model against EuroLLM 1.7B (Martins et al., 2024). To ensure a robust and comparable assessment of our model's performance, we adopt the evaluation framework established

	Hellaswag	MMLU	ARC-C	M-Hellaswag	MMMLU	M-ARC-C
1.7B	55.4	34.1	39.3	45.4	30.8	32.8
2.6B-A0.6B	**59.3**	**36.5**	**44.9**	**49.0**	**33.1**	**37.3**

Table 2: Comparison of the **pre-trained** versions of EuroMoE-2.6B-A0.6B and EuroLLM-1.7B on English and multilingual benchmarks, aggregating across all oficial European languages.

	IF	General				STEM				
	IFEval	HSwag	MMLU	MMLU Pro	BBH	ARC-C	GPQA ♦	GSM8K	MATH 500	Human Eval
1.7B	9.8	18.7	26.1	10.1	**28.2**	27.9	12.3	20.4	3.9	**25.2**
2.6B-A0.6B	**24.7**	**28.1**	**36.9**	**18.9**	23.7	**44.1**	**16.8**	**24.5**	**10.7**	22.8

Table 3: Results for the **post-trained** versions of of EuroMoE-2.6B-A0.6B and EuroLLM-1.7B on English benchmarks.

in EuroLLM 22B (Ramos et al., 2026). This protocol covers a diverse array of benchmarks across English and multilingual settings, using and LLM-as-a-judge assessment pipeline.[3]

4.1 Evaluation Setup

English Benchmarks. We evaluate instruction following using IFEval (Kovalevskyi, 2024), which tests adherence to objective formatting constraints. For general knowledge and reasoning, we employ HellaSwag (Zellers et al., 2019), MMLU (Hendrycks et al., 2021), MMLU-Pro (Wang et al., 2025), and BBH (Suzgun et al., 2023). We measure performance on STEM tasks via ARC-C (Clark et al., 2018), GPQA ♦ (Rein et al., 2024), GSM8K (Cobbe et al., 2021), and MATH-500 (Lightman et al., 2023), and assess coding capabilities using HumanEval (Chen et al., 2021).

Multilingual Benchmarks. Our multilingual evaluation covers the 35 languages supported by the EuroLLM family. We utilize multilingual extensions of standard benchmarks, specifically M-Hellaswag, MMMLU, and MMLU-ProX (Dac Lai et al., 2023; Xuan et al., 2025) for general knowledge, alongside M-ARC-C (Dac Lai et al., 2023) and MGSM (Shi et al., 2022) for STEM tasks. We also measure translation quality on FLORES-200 (Costa-jussà et al., 2024), WMT24++ (Deutsch et al., 2025), and WMT25 (Kocmi et al., 2025).

Evaluation Protocol. Following Ramos et al. (2026), we generate with the parameters recommended by the authors and, when they are not available, we fall-back to greedy decoding. Given that EuroMoE is a non-thinking model, we perform all generation in non-thinking mode. We evaluate answers via LLM-as-a-judge to ensure semantic accuracy over rigid rule-based extraction.[4] We use an ensemble of Nemotron-49B (Bercovich et al., 2025), GPT-OSS-120B (OpenAI, 2025), and Qwen3-235B-A22B (Yang et al., 2025), aggregating their scores by mean. For translation, we report COMET-22 (Rei et al., 2022) scores.

4.2 Results

Results for pre-trained models. Table 2 compares the performance of the EuroMoE-2.6B-A0.6B and EuroLLM-1.7B base models across English and multilingual European benchmarks. In Appendix A.1, we also report per-language result for all benchmarks. Overall, the results indicate that EuroMoE-2.6B-A0.6B consistently outperforms the EuroLLM-1.7B baseline. This margin reflects the improvements made in the EuroLLM training recipe since the initial release of the EuroLLM-1.7B model.

Results for post-trained models. The results for the post-trained versions of both models are summarized in Tables 3 and 4. We also report results for all languages in Appendix A.2. Following the trend observed in the base models, the EuroMoE-2.6B-A0.6B instruct version maintains a clear performance lead over EuroLLM-1.7B in both English-specific and multilingual European contexts.

[3] Our evaluation results are available at https://github.com/deep-spin/eurollm-eval.

[4] Further details regarding this choice are available in the EuroLLM 22B model report (Ramos et al., 2026).

	General			STEM		Translation		
	M-Hellaswag	**MMMLU**	**MMLU ProX**	**M-ARC-C**	**MGSM**	**FLORES**	**WMT24++**	**WMT25**
1.7B	**23.4**	23.3	11.4	22.4	8.2	**86.9**	**80.2**	*
2.6B-A0.6B	19.5	**32.1**	**14.5**	**36.4**	**14.9**	**86.9**	**80.2**	**72.7**

Table 4: Results for the **post-trained** versions of of EuroMoE-2.6B-A0.6B and EuroLLM-1.7B on multilingual benchmarks, across all oficial European languages. *Not evaluated on WMT25 because the model's maximum context length is insufficient.

5 CONCLUSIONS

We have presented EuroMoE-2.6B-A0.6B, a small and efficient mixture-of-experts model. Throughout this work, we detail our transition from dense to sparse architectures, highlighting our experiments with model upcycling and the subsequent decision to train from scratch to ensure optimal performance at larger token scales. By releasing the model weights, we continue our commitment to strengthening the open AI ecosystem for all 24 official EU languages. Our results demonstrate that EuroMoE offers a compelling balance of efficiency and multilingual proficiency, providing a scalable blueprint for future sparse models within the EuroLLM family.

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Vodrahalli, George Necula, Paul Barham, Ellie Pavlick, Jay Hartford, Izhak Shafran, Long Zhao, Maciej Mikuła, Tom Eccles, Hidetoshi Shimokawa, Kanav Garg, Luke Vilnis, Hanwen Chen, Ilia Shumailov, Kuang-Huei Lee, Abdelrahman Abdelhamed, Meiyan Xie, Vered Cohen, Ester Hlavnova, Dan Malkin, Chawin Sitawarin, James Lottes, Pauline Coquinot, Tianli Yu, Sandeep Kumar, Jingwei Zhang, Aroma Mahendru, Zafarali Ahmed, James Martens, Tao Chen, Aviel Boag, Daiyi Peng, Coline Devin, Arseniy Klimovskiy, Mary Phuong, Danny Vainstein, Jin Xie, Bhuvana Ramabhadran, Nathan Howard, Xinxin Yu, Gitartha Goswami, Jingyu Cui, Sam Shleifer, Mario Pinto, Chih-Kuan Yeh, Ming-Hsuan Yang, Sara Javanmardi, Dan Ethier, Chace Lee, Jordi Orbay, Suyog Kotecha, Carla Bromberg, Pete Shaw, James Thornton, Adi Gerzi Rosenthal, Shane Gu, Matt Thomas, Ian Gemp, Aditya Ayyar, Asahi Ushio, Aarush Selvan, Joel Wee, Chenxi Liu, Maryam Majzoubi, Weiren Yu, Jake Abernethy, Tyler Liechty, Renke Pan, Hoang Nguyen, Qiong, Hu, Sarah Perrin, Abhinav Arora, Emily Pitler, Weiyi Wang, Kaushik Shivakumar, Flavien Prost, Ben Limonchik, Jing Wang, Yi Gao, Timothee Cour, Shyamal Buch, Huan Gui, Maria Ivanova, Philipp Neubeck, Kelvin Chan, Lucy Kim, Huizhong Chen, Naman Goyal, Da-Woon Chung, Lu Liu, Yao Su, Anastasia Petrushkina, Jiajun Shen, Armand Joulin, Yuanzhong Xu, Stein Xudong Lin, Yana Kulizhskaya, Ciprian Chelba, Shobha Vasudevan, Eli Collins, Vasilisa Bashlovkina, Tony Lu, Doug Fritz, Jongbin Park, Yanqi Zhou, Chen Su, Richard Tanburn, Mikhail Sushkov, Mitchelle Rasquinha, Jinning Li, Jennifer Prendki, Yiming Li, Pallavi LV, Shriya Sharma, Hen Fitoussi, Hui Huang, Andrew Dai, Phuong Dao, Mike Burrows, Henry Prior, Danfeng Qin, Golan Pundak, Lars Lowe Sjoesund, Art Khurshudov, Zhenkai Zhu, Albert Webson, Elizabeth Kemp, Tat Tan, Saurabh Agrawal, Susie Sargsyan, Liqun Cheng, Jim Stephan, Tom Kwiatkowski, David Reid, Arunkumar Byravan, Assaf Hurwitz Michaely, Nicolas Heess, Luowei Zhou, Sonam Goenka, Viral Carpenter, Anselm Levskaya, Bo Wang, Reed Roberts, Rémi Leblond, Sharat Chikkerur, Stav Ginzburg, Max Chang, Robert Riachi, Chuqiao, Xu, Zalán Borsos, Michael Pliskin, Julia Pawar, Morgane Lustman, Hannah Kirkwood, Ankit Anand, Aditi Chaudhary, Norbert Kalb, Kieran Milan, Sean Augenstein, Anna Goldie, Laurel Prince, Karthik Raman, Yanhua Sun, Vivian Xia, Aaron Cohen, Zhouyuan Huo, Josh Camp, Seher Ellis, Lukas Zilka, David Vilar Torres, Lisa Patel, Sho Arora, Betty Chan, Jonas Adler, Kareem Ayoub, Jacky Liang, Fayaz Jamil, Jiepu Jiang, Simon Baumgartner, Haitian Sun, Yael Karov, Yaroslav Akulov, Hui Zheng, Irene Cai, Claudio Fantacci, James Rubin, Alex Rav Acha, Mengchao Wang, Nina D'Souza, Rohit Sathyanarayana, Shengyang Dai, Simon Rowe, Andrey Simanovsky, Omer Goldman, Yuheng Kuang, Xiaoyue Pan, Andrew Rosenberg, Tania Rojas-Esponda, Praneet Dutta, Amy Zeng, Irina Jurenka, Greg Farquhar, Yamini Bansal, Shariq Iqbal, Becca Roelofs, Ga-Young Joung, Parker Beak, Changwan Ryu, Ryan Poplin, Yan Wu, Jean-Baptiste Alayrac, Senaka Buthpitiya, Olaf Ronneberger, Caleb Habtegebriel, Wei Li, Paul Cavallaro, Aurora Wei, Guy Bensky, Timo Denk, Harish Ganapathy, Jeff Stanway, Pratik Joshi, Francesco Bertolini, Jessica Lo, Olivia Ma, Zachary Charles, Geta Sampemane, Himanshu Sahni, Xu Chen, Harry Askham, David Gaddy, Peter Young, Jiewen Tan, Matan Eyal, Arthur Bražinskas, Li Zhong, Zhichun Wu, Mark Epstein, Kai Bailey, Andrew Hard, Kamyu Lee, Sasha Goldshtein, Alex Ruiz, Mohammed Badawi, Matthias Lochbrunner, JK Kearns, Ashley Brown, Fabio Pardo, Theophane Weber, Haichuan Yang, Pan-Pan Jiang, Berkin Akin, Zhao Fu, Marcus Wainwright, Chi Zou, Meenu Gaba, Pierre-Antoine Manzagol, Wendy Kan, Yang Song, Karina Zainullina, Rui Lin, Jeongwoo Ko, Salil Deshmukh, Apoorv Jindal, James Svensson, Divya Tyam, Heri Zhao, Christine Kaeser-Chen, Scott Baird, Pooya Moradi, Jamie Hall, Qiuchen Guo, Vincent Tsang, Bowen Liang, Fernando Pereira, Suhas Ganesh, Ivan Korotkov, Jakub Adamek, 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Brendan Jou, Liang Bai, Francesco Piccinno, Chuyuan Kelly Fu, Robin Alazard, Barak Meiri, Daniel Winter, Charlie Chen, Mingda Zhang, Jens Heitkaemper, John Lambert, Jinhyuk Lee, Alexander Frömmgen, Sergey Rogulenko, Pranav Nair, Paul Niemczyk, Anton Bulyenov, Bibo Xu, Hadar Shemtov, Morteza Zadimoghaddam, Serge Toropov, Mateo Wirth, Hanjun Dai, Sreenivas Gollapudi, Daniel Zheng, Alex Kurakin, Chansoo Lee, Kalesha Bullard, Nicolas Serrano, Ivana Balazevic, Yang Li, Johan Schalkwyk, Mark Murphy, Mingyang Zhang, Kevin Sequeira, Romina Datta, Nishant Agrawal, Charles Sutton, Nithya Attaluri, Mencher Chiang, Wael Farhan, Gregory Thornton, Kate Lin, Travis Choma, Hung Nguyen, Kingshuk Dasgupta, Dirk Robinson, Iulia Comşa, Michael Riley, Arjun Pillai, Basil Mustafa, Ben Golan, Amir Zandieh, Jean-Baptiste Lespiau, Billy Porter, David Ross, Sujeevan Rajayogam, Mohit Agarwal, Subhashini Venugopalan, Bobak Shahriari, Qiqi Yan, Hao Xu, Taylor Tobin, Pavel Dubov, Hongzhi Shi, Adrià Recasens, Anton Kovsharov, Sebastian Borgeaud, Lucio Dery, Shanthal Vasanth, Elena Gribovskaya, Linhai Qiu, Mahdis Mahdieh, Wojtek Skut, Elizabeth Nielsen, CJ Zheng, Adams Yu, Carrie Grimes Bostock, Shaleen Gupta, Aaron Archer, Chris Rawles, Elinor Davies, Alexey Svyatkovskiy, Tomy Tsai, Yoni Halpern, Christian Reisswig, Bartek Wydrowski, Bo Chang, Joan Puigcerver, Mor Hazan Taege, Jian Li, Eva Schnider, Xinjian Li, Dragos Dena, Yunhan Xu, Umesh Telang, Tianze Shi, Heiga Zen, Kyle Kastner, Yeongil Ko, Neesha Subramaniam, Aviral Kumar, Pete Blois, Zhuyun Dai, John Wieting, Yifeng Lu, Yoel Zeldes, Tian Xie, Anja Hauth, Alexandru Ţifrea, Yuqi Li, Sam El-Husseini, Dan Abolafia, Howard Zhou, Wen Ding, Sahra Ghalebikesabi, Carlos Guía, Andrii Maksai, Ágoston Weisz, Sercan Arik, Nick Sukhanov, Aga Świetlik, Xuhui Jia, Luo Yu, Weiyue Wang, Mark Brand, Dawn Bloxwich, Sean Kirmani, Zhe Chen, Alec Go, Pablo Sprechmann, Nithish Kannen, Alen Carin, Paramjit Sandhu, Isabel Edkins, Leslie Nooteboom, Jai Gupta, Loren Maggiore, Javad Azizi, Yael Pritch, Pengcheng Yin, Mansi Gupta, Danny Tarlow, Duncan Smith, Desi Ivanov, Mohammad Babaeizadeh, Ankita Goel, Satish Kambala, Grace Chu, Matej Kastelic, Michelle Liu, Hagen Soltau, Austin Stone, Shivani Agrawal, Min Kim, Kedar Soparkar, Srinivas Tadepalli, Oskar Bunyan, Rachel Soh, Arvind Kannan, DY Kim, Blake JianHang Chen, Afief Halumi, Sudeshna Roy, Yulong Wang, Olcan Sercinoglu, Gena Gibson, Sijal Bhatnagar, Motoki Sano, Daniel von Dincklage, Qingchun Ren, Blagoj Mitrevski, Mirek Olšák, Jennifer She, Carl Doersch, Jilei, Wang, Bingyuan Liu, Qijun Tan, Tamar Yakar, Tris Warkentin, Alex Ramirez, Carl Lebsack, Josh Dillon, Rajiv Mathews, Tom Cobley, Zelin Wu, Zhuoyuan Chen, Jon Simon, Swaroop Nath, Tara Sainath, Alexei Bendebury, Ryan Julian, Bharath Mankalale, Daria Ćurko, Paulo Zacchello, Adam R. Brown, Kiranbir Sodhia, Heidi Howard, Sergi Caelles, Abhinav Gupta, Gareth Evans, Anna Bulanova, Lesley Katzen, Roman Goldenberg, Anton Tsitsulin, Joe Stanton, Benoit Schillings, Vitaly Kovalev, Corey Fry, Rushin Shah, Kuo Lin, Shyam Upadhyay, Cheng Li, Soroush Radpour, Marcello Maggioni, Jing Xiong, Lukas Haas, Jenny Brennan, Aishwarya Kamath, Nikolay Savinov, Arsha Nagrani, Trevor Yacovone, Ryan Kappedal, Kostas Andriopoulos, Li Lao, YaGuang Li, Grigory Rozhdestvenskiy, Kazuma Hashimoto, Andrew Audibert, Sophia Austin, Daniel Rodriguez, Anian Ruoss, Garrett Honke, Deep Karkhanis, Xi Xiong, Qing Wei, James Huang, Zhaoqi Leng, Vittal Premachandran, Stan Bileschi, Georgios Evangelopoulos, Thomas Mensink, Jay Pavagadhi, Denis Teplyashin, Paul Chang, Linting Xue, Garrett Tanzer, Sally Goldman, Kaushal Patel, Shixin Li, Jeremy Wiesner, Ivy Zheng, Ian Stewart-Binks, Jie Han, Zhi Li, Liangchen Luo, Karel Lenc, Mario Lučić, Fuzhao Xue, Ryan Mullins, Alexey Guseynov, Chung-Ching Chang, Isaac Galatzer-Levy, Adam Zhang, Garrett Bingham, Grace Hu, Ale Hartman, Yue Ma, Jordan Griffith, Alex Irpan, Carey Radebaugh, Summer Yue, Lijie Fan, Victor Ungureanu, Christina Sorokin, Hannah Teufel, Peiran Li, Rohan Anil, Dimitris Paparas, Todd Wang, Chu-Cheng Lin, Hui Peng, Megan Shum, Goran Petrovic, Demetra Brady, Richard Nguyen, Klaus Macherey, Zhihao Li, Harman Singh, Madhavi Yenugula, Mariko Iinuma, Xinyi Chen, Kavya Kopparapu, Alexey Stern, Shachi Dave, Chandu Thekkath, Florence Perot, Anurag Kumar, Fangda Li, Yang Xiao, Matthew Bilotti, Mohammad Hossein Bateni, Isaac Noble, Lisa Lee, Amelio Vázquez-Reina, Julian Salazar, Xiaomeng Yang, Boyu Wang, Ela Gruzewska, Anand Rao, Sindhu Raghuram, Zheng Xu, Eyal Ben-David, Jieru Mei, Sid Dalmia, Zhaoyi Zhang, Yuchen Liu, Gagan Bansal, Helena Pankov, Steven Schwarcz, Andrea Burns, Christine Chan, Sumit Sanghai, Ricky Liang, Ethan Liang, Antoine He, Amy Stuart, Arun Narayanan, Yukun Zhu, Christian Frank, Bahar Fatemi, Amit Sabne, Oran Lang, Indro Bhattacharya, Shane Settle, Maria Wang, Brendan McMahan, Andrea Tacchetti, Livio Baldini Soares, Majid Hadian, Serkan Cabi, Timothy Chung, Nikita Putikhin, Gang Li, Jeremy Chen, Austin Tarango, Henryk Michalewski, Mehran Kazemi, Hussain Masoom, Hila Sheftel, Rakesh Shivanna, Archita Vadali, Ramona Comanescu, Doug Reid, Joss Moore, Arvind Neelakantan, Michaël Sander, Jonathan Herzig, Aviv Rosenberg, Mostafa Dehghani, JD Choi, Michael Fink, Reid Hayes, Eric Ge, Shitao Weng, Chia-Hua Ho, John Karro, Kalpesh Krishna, Lam Nguyen Thiet, Amy Skerry-Ryan, Daniel Eppens, Marco Andreetto, Navin Sarma, Silvano Bonacina, Burcu Karagol Ayan, Megha Nawhal, Zhihao Shan, Mike Dusenberry,

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Sieb, Lauren Agubuzu, Anne Zheng, Daniel Sohn, Marco Selvi, Anders Andreassen, Krishan Subudhi, Prem Eruvbetine, Oliver Woodman, Tomas Mery, Sebastian Krause, Xiaoqi Ren, Xiao Ma, Jincheng Luo, Dawn Chen, Wei Fan, Henry Griffiths, Christian Schuler, Alice Li, Shujian Zhang, Jean-Michel Sarr, Shixin Luo, Riccardo Patana, Matthew Watson, Dani Naboulsi, Michael Collins, Sailesh Sidhwani, Emiel Hoogeboom, Sharon Silver, Emily Caveness, Xiaokai Zhao, Mikel Rodriguez, Maxine Deines, Libin Bai, Patrick Griffin, Marco Tagliasacchi, Emily Xue, Spandana Raj Babbula, Bo Pang, Nan Ding, Gloria Shen, Elijah Peake, Remi Crocker, Shubha Srinivas Raghvendra, Danny Swisher, Woohyun Han, Richa Singh, Ling Wu, Vladimir Pchelin, Tsendsuren Munkhdalai, Dana Alon, Geoff Bacon, Efren Robles, Jannis Bulian, Melvin Johnson, George Powell, Felipe Tiengo Ferreira, Yaoyiran Li, Frederik Benzing, Mihajlo Velimirović, Hubert Soyer, William Kong, Tony, Nguyên, Zhen Yang, Jeremiah Liu, Joost van Amersfoort, Daniel Gillick, Baochen Sun, Nathalie Rauschmayr, Katie Zhang, Serena Zhan, Tao Zhou, Alexey Frolov, Chengrun Yang, Denis Vnukov, Louis Rouillard, Hongji Li, Amol Mandhane, Nova Fallen, Rajesh Venkataraman, Clara Huiyi Hu, Jennifer Brennan, Jenny Lee, Jerry Chang, Martin Sundermeyer, Zhufeng Pan, Rosemary Ke, Simon Tong, Alex Fabrikant, William Bono, Jindong Gu, Ryan Foley, Yiran Mao, Manolis Delakis, Dhruva Bhaswar, Roy Frostig, Nick Li, Avital Zipori, Cath Hope, Olga Kozlova, Swaroop Mishra, Josip Djolonga, Craig Schiff, Majd Al Merey, Eleftheria Briakou, Peter Morgan, Andy Wan, Avinatan Hassidim, RJ Skerry-Ryan, Kuntal Sengupta, Mary Jasarevic, Praveen Kallakuri, Paige Kunkle, Hannah Brennan, Tom Lieber, Hassan Mansoor, Julian Walker, Bing Zhang, Annie Xie, Goran Žužić, Adaeze Chukwuka, Alex Druinsky, Donghyun Cho, Rui Yao, Ferjad Naeem, Shiraz Butt, Eunyoung Kim, Zhipeng Jia, Mandy Jordan, Adam Lelkes, Mark Kurzeja, Sophie Wang, James Zhao, Andrew Over, Abhishek Chakladar, Marcel 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A Detailed Results

A.1 Base Models

Tables 5, 7 and 6 report the per-language evaluation results for both base models, EuroLLM-1.7B and EuroMoE-2.6B-A0.6B.

	EU												Non-EU				
	da	**de**	**es**	**fr**	**hr**	**hu**	**it**	**nl**	**pt**	**ro**	**sk**	**sv**	**ar**	**ca**	**hi**	**ru**	**uk**
1.7B	45.9	45.2	49.7	48.9	40.9	39.3	48.1	47.5	47.5	43.5	42.6	45.9	39.9	43.0	36.4	43.7	42.9
2.6B-A0.6B	**50.1**	**48.8**	**53.4**	**52.8**	**44.9**	**41.4**	**51.9**	**51.0**	**51.2**	**47.0**	**45.3**	**50.7**	**42.4**	**46.6**	**37.1**	**46.4**	**45.9**

Table 5: Per-language results for **pre-trained** models on M-Hellaswag.

	EU												Non-EU					
	da	**de**	**es**	**fr**	**hr**	**hu**	**it**	**nl**	**pt**	**ro**	**sk**	**sv**	**ar**	**ca**	**hi**	**ru**	**uk**	**zh**
1.7B	31.4	31.8	31.7	31.6	29.2	29.8	31.2	30.8	31.5	30.0	30.0	30.8	27.8	30.3	27.3	29.7	28.8	30.4
2.6B-A0.6B	**33.5**	**33.5**	**34.3**	**34.3**	**31.2**	**30.8**	**34.4**	**33.1**	**33.6**	**32.5**	**31.8**	**33.6**	**29.0**	**32.5**	**28.6**	**31.4**	**30.8**	**30.9**

Table 6: Per-language results for **pre-trained** models on MMMLU.

	EU												Non-EU					
	da	**de**	**es**	**fr**	**hr**	**hu**	**it**	**nl**	**pt**	**ro**	**sk**	**sv**	**ar**	**ca**	**hi**	**ru**	**uk**	**zh**
1.7B	32.5	32.5	34.8	33.5	30.1	29.4	32.5	34.7	35.8	35.4	29.1	33.8	29.1	29.5	26.2	31.1	31.2	33.4
2.6B-A0.6B	**36.8**	**37.8**	**38.6**	**38.9**	**32.9**	**33.3**	**39.5**	**38.7**	**40.6**	**38.5**	**34.2**	**38.4**	**30.1**	**36.1**	**27.6**	**35.3**	**34.6**	**34.4**

Table 7: Per-language results for **pre-trained** models on M-ARC-C.

A.2 Instruction-Tuned Models

A.2.1 Detailed Results

This section reports the per-language evaluation on all post-training benchmarks for both EuroLLM-1.7B and EuroMoE-2.6B-A0.6B.

	EU												Non-EU				
	da	**de**	**es**	**fr**	**hr**	**hu**	**it**	**nl**	**pt**	**ro**	**sk**	**sv**	**ar**	**ca**	**hi**	**ru**	**uk**
1.7B	**24.7**	**26.6**	**24.5**	17.2	**27.1**	**18.2**	21.3	**25.3**	**24.0**	**21.9**	**25.4**	**24.7**	**26.5**	**22.5**	**24.1**	**23.4**	**24.9**
2.6B-A0.6B	19.8	24.1	21.5	**21.2**	19.1	13.1	**21.8**	19.1	20.5	16.6	16.1	20.6	20.5	17.9	19.2	17.8	17.5

Table 8: Per-language results for **post-trained** models on M-Hellaswag.

	EU												Non-EU					
	da	**de**	**es**	**fr**	**hr**	**hu**	**it**	**nl**	**pt**	**ro**	**sk**	**sv**	**ar**	**ca**	**hi**	**ru**	**uk**	**zh**
1.7B	23.8	23.2	25.0	25.7	19.7	19.7	25.2	25.3	24.1	22.2	22.4	22.8	19.8	24.4	20.5	23.5	21.5	23.0
2.6B-A0.6B	**31.6**	**33.9**	**35.4**	**35.0**	**29.5**	**25.1**	**34.3**	**32.7**	**32.2**	**32.0**	**31.5**	**31.6**	**27.8**	**31.2**	**26.6**	**29.8**	**29.5**	**31.0**

Table 9: Per-language results for **post-trained** models on MMMLU.

	EU							Non-EU						
	cs	**de**	**es**	**fr**	**hu**	**it**	**pt**	**ar**	**hi**	**ja**	**ko**	**ru**	**uk**	**zh**
1.7B	10.8	11.8	11.9	12.1	9.7	11.6	11.9	11.1	9.8	9.9	9.0	11.0	10.5	10.6
2.6B-A0.6B	**14.0**	**14.8**	**16.1**	**15.5**	**11.9**	**15.1**	**14.4**	**13.4**	**13.3**	**12.4**	**12.9**	**14.4**	**14.2**	**14.4**

Table 10: Per-language results for **post-trained** models on MMLU-ProX.

	EU												Non-EU					
	da	**de**	**es**	**fr**	**hr**	**hu**	**it**	**nl**	**pt**	**ro**	**sk**	**sv**	**ar**	**ca**	**hi**	**ru**	**uk**	**zh**
1.7B	21.9	21.0	25.6	24.0	18.0	19.5	24.6	23.9	23.7	22.0	22.7	22.4	16.6	23.1	18.1	23.0	21.2	21.5
2.6B-A0.6B	**32.8**	**37.8**	**39.1**	**42.4**	**30.4**	**26.7**	**40.5**	**40.1**	**36.5**	**35.1**	**38.1**	**37.1**	**31.6**	**37.0**	**28.9**	**34.8**	**33.5**	**35.5**

Table 11: Per-language results for **post-trained** models on M-ARC-C.

	EU			Non-EU		
	de	**es**	**fr**	**ja**	**ru**	**zh**
1.7B	6.7	6.8	11.1	2.7	8.3	2.5
2.6B-A0.6B	**15.3**	**15.1**	**14.3**	**9.5**	**16.4**	**14.3**

Table 12: Per-language results for **post-trained** models on MGSM.

	en-bg	**en-cs**	**en-da**	**en-de**	**en-el**	**en-es**	**en-et**	**en-fi**	**en-fr**	**en-ga**	**en-hr**	**en-hu**	**en-it**	**en-lt**	**en-mt**	**en-nl**	**en-pl**	**en-pt**	**en-ro**	**en-sk**	**en-sl**	**en-sv**
1.7B	89.5	89.2	89.6	87.0	87.8	**86.3**	88.7	89.4	87.6	**74.5**	84.9	86.7	88.2	87.2	67.9	87.1	88.2	89.2	89.6	87.9	86.5	90.0
2.6B-A0.6B	**89.8**	**89.9**	**90.0**	**87.4**	**88.5**	86.2	**89.2**	**89.6**	**88.0**	73.1	**86.3**	**87.0**	**88.5**	**87.3**	**68.2**	**87.5**	**88.4**	**89.3**	**90.1**	**88.9**	**87.4**	**90.1**

Table 13: Per-language results for **post-trained** models on FLORES for EU, out-of-English language pairs.

	bg-en	**cs-en**	**da-en**	**de-en**	**el-en**	**es-en**	**et-en**	**fi-en**	**fr-en**	**ga-en**	**hr-en**	**hu-en**	**it-en**	**lt-en**	**mt-en**	**nl-en**	**pl-en**	**pt-en**	**ro-en**	**sk-en**	**sl-en**	**sv-en**
1.7B	**87.5**	**88.0**	**89.7**	**88.8**	**87.0**	**87.0**	**88.2**	**89.1**	**89.0**	**82.4**	86.7	**87.4**	**87.8**	**85.6**	**81.3**	**87.1**	**85.7**	**89.2**	**88.9**	**87.4**	**86.8**	**89.6**
2.6B-A0.6B	87.4	87.8	89.6	88.6	**87.0**	86.8	87.8	88.9	**89.0**	79.8	**86.9**	86.9	87.6	84.9	80.5	86.7	85.3	89.1	88.6	87.2	86.6	89.2

Table 14: Per-language results for **post-trained** models on FLORES for EU, into-English language pairs.

	en-xx									xx-en								
	en-ca	**en-gl**	**en-hi**	**en-ja**	**en-ko**	**en-ru**	**en-tr**	**en-uk**	**en-zh**	**ca-en**	**gl-en**	**hi-en**	**ja-en**	**ko-en**	**ru-en**	**tr-en**	**uk-en**	**zh-en**
1.7B	84.6	86.4	77.0	89.8	**87.6**	88.3	87.1	87.8	86.6	**87.7**	**87.8**	**88.3**	**86.8**	**86.8**	86.0	**88.0**	86.3	**86.3**
2.6B-A0.6B	**84.8**	**86.8**	**78.2**	**89.9**	**87.6**	**88.6**	**87.7**	**88.7**	**86.8**	86.9	**87.8**	87.7	86.7	86.5	**86.1**	86.6	**86.5**	86.1

Table 15: Per-language results for **post-trained** models on FLORES for non-EU language pairs.

	en-bg	**en-cs**	**en-da**	**en-de**	**en-el**	**en-es**	**en-et**	**en-fi**	**en-fr**	**en-hr**	**en-hu**	**en-it**	**en-lt**	**en-lv**	**en-nl**	**en-pl**	**en-pt**	**en-ro**	**en-sk**	**en-sl**	**en-sv**
1.7B	81.4	79.8	81.3	79.0	82.0	80.4	**81.9**	**62.7**	78.1	75.0	77.9	81.3	**79.0**	**79.0**	81.2	80.0	**81.7**	81.4	77.5	**78.7**	82.5
2.6B-A0.6B	**81.9**	**81.3**	**81.6**	**79.3**	**82.6**	**80.8**	81.8	62.6	**78.7**	**76.7**	**78.5**	**81.7**	78.5	78.2	**81.6**	**80.7**	**81.7**	**81.7**	**79.1**	**78.7**	**83.0**

Table 16: Per-language results for **post-trained** models on WMT24++ for EU, out-of-English language pairs.

	bg-en	**cs-en**	**da-en**	**de-en**	**el-en**	**es-en**	**et-en**	**fi-en**	**fr-en**	**hr-en**	**hu-en**	**it-en**	**lt-en**	**lv-en**	**nl-en**	**pl-en**	**pt-en**	**ro-en**	**sk-en**	**sl-en**	**sv-en**
1.7B	**82.7**	**81.9**	**84.1**	**83.2**	**83.4**	**84.0**	**83.5**	59.4	**82.7**	**80.9**	**81.1**	**83.6**	**79.4**	**80.8**	**83.4**	**80.6**	**83.3**	**83.2**	**81.4**	**81.7**	**84.3**
2.6B-A0.6B	82.3	81.5	83.4	82.4	82.6	83.0	82.4	**62.0**	82.3	80.8	79.6	83.0	77.9	80.4	82.8	79.8	**83.3**	82.4	80.7	80.9	83.7

Table 17: Per-language results for **post-trained** models on WMT24++ for EU, into-English language pairs.

	en-xx										xx-en									
	en-ar	**en-ca**	**en-hi**	**en-ja**	**en-ko**	**en-no**	**en-ru**	**en-tr**	**en-uk**	**en-zh**	**ar-en**	**ca-en**	**hi-en**	**ja-en**	**ko-en**	**no-en**	**ru-en**	**tr-en**	**uk-en**	**zh-en**
1.7B	73.9	**74.3**	66.4	**82.5**	80.9	81.6	77.6	79.6	79.2	**79.7**	**75.1**	**80.2**	**82.5**	**80.1**	**81.2**	**84.2**	**78.0**	**82.7**	**81.1**	**80.9**
2.6B-A0.6B	**75.1**	**74.3**	**67.9**	82.2	**81.1**	**82.2**	**79.0**	**79.7**	**80.6**	79.5	74.0	78.6	81.9	79.9	80.9	83.8	77.8	80.6	80.7	80.4

Table 18: Per-language results for **post-trained** models on WMT24++ for non-EU language pairs.

	EU			Non-EU							
	en-cs	**en-et**	**cs-de**	**en-ar**	**en-ja**	**en-ko**	**en-ru**	**en-uk**	**en-zh**	**cs-uk**	**ja-zh**
1.7B	-	-	-	-	-	-	-	-	-	-	-
2.6B-A0.6B	**72.6**	**72.9**	**71.8**	**65.2**	**73.8**	**69.6**	**74.4**	**73.2**	**74.0**	**78.5**	**64.6**

Table 19: Per-language results for **post-trained** models on WMT25.