Gregory MS Annual Review 2024

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Foreword

Looking back to 2024, I am happy to see how far we have come.

The beginning of 2024 felt challenging, but later I realized we've achieved important milestones that can't be measured solely by numbers.

But you will see that there are several wins that we can't measure by numbers alone.

Right now, as far as I know, Gregory-MS is the biggest patient-led, independent project, to tackle Multiple Sclerosis research.

We have a real-time map of research, clinical trials, and promising treatments. We built a non-profit to be transparent about our costs and donations; We partnered with others that are looking to go further than prescribing the best anti-inflammatories and are researching how to regenerate the brain.

We are a cross-road where the project could grow to have a full time developer working on improving the software for everyone and tackle any disease.

The Artificial Intelligence landscape is also showing promise. Gregory-AI has a plugin system that can allow us to tap into any Large Language Model. What stops us is our lack of resources and my lack of time to learn how to develop these features further.

(I was never taught Computer Science or how to code. All you see with Gregory-AI was built with what I learned during the Covide quarantines.)

This lack of time also explains why this report is published in April and not February, as usual. My time has been split between my teaching job, the consulting work with the Lisbon Collective, and Gregory-AI.

But here we are, and I am still looking for ways to help MS research with the little I know about AI and my desire to see more treatments discovered.

Lately this led me to go deeper into Clinical Trials, as you will see in the summary that follows.

I can't promise speed, but I can promise that Gregory-AI will keep moving forward and that we will keep looking for ways to help everyone with MS for as long as I can.

— Bruno

Summary

This report focuses more on hard numbers than on soft achievements this last year, but they are worth mentioning.

The software is now better. It's more flexible and able to monitor other research subjects than just Multiple Sclerosis. This opens a door to explore stem cell research, and other promising fields for brain regeneration.

We also added the Clinical Trial Information System (CTIS) as a new source to notify people with MS of new or updated trials.

Two new clinical research groups saw value in Gregory-AI and applied it to their websites.

The REGENERAR project aims to revolutionize the treatment of neurological disorders and promote brain repair by reprogramming certain brain cells into functional neurons. Their website uses [Gregory AI to show the most up-to-date research on brain regeneration](https://research.regenerar.eu/)[1].

Also, the [GENIE research group](https://investigacao.encefalites.pt/)[2] is using their installation of Gregory-AI to monitor research in autoimmune encephalitis.

It wasn't all wins. We had an issue with our email service and were forced to pause the alerts for new clinical trials for a few days. Our account was compromised and used to send spam emails. No personal information was put at risk since we keep it on our server. We also have no reason to believe that our server was compromised.

It was the first time the project sustained itself thanks to your donations. While our costs aren't very high, they still required some watching over the accounts to make sure we had funds to cover the costs.

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[1] https://research.regenerar.eu/
[2] https://investigacao.encefalites.pt/

Gregory AI — New Developments

Last year we renamed the project to Gregory AI to show it can be applied to any kind of research. There was however an obstacle, you would have to install a server for each subject you'd want to research.

1. Teams and Research Subjects

We changed the software and now the same Gregory AI can host one or more teams, and each team can have one or more research subjects. For example, a team researching MS treatments can create a distinct set of sources, articles, and categories, separate from another team focused exclusively on brain regeneration techniques.

2. Better email lists

There was a complete review of how users can subscribe to alerts, based on subject(s), and content type (clinical trials or articles).

Now you can create a subscription list for people to get a weekly digest for one subject. Or you can combine subjects into a single list.

You can also pick what kind of content you want. The options are "Weekly Digest", "Admin Summary", "Clinical Trials".

- Weekly Digest sends all new relevant papers and clinical trials.
- Admin Summary sends all the published papers so that the admin team can verify which are relevant.
- Clinical Trials sends an alert as soon as a trial is registered or updated.

For each of these lists, you can pick which sources are used to fetch papers and clinical trials. This gives you more flexibility to build your email lists.

3. Added the Clinical Trial Information System as a source.

The European Union developed this new registry platform for clinical trials. You can find it at https://euclinicaltrials.eu/ and generate an RSS feed link to use with Gregory AI.

With this, we can monitor the world's biggest registry platforms.

1. ClinicalTrials.gov - United States
2. Trialsearch.who.int - World Health Organisation
3. EuClinicalTrials.eu - European Union and European Economic Area

Other registries can also be added via the Application Protocol Interface.

4. Categories are now tied to a research subject.

This was a much needed improvement. Before, every category would be applied to papers and clinical trials in the whole database. If a researcher wanted to track Multiple Sclerosis and Amyotrophic Lateral Sclerosis, they would see the same categories in both collections.

The new system allows researchers to tie categories to a single subject, allowing better organisation.

5. Improvements to AI algorithms.

It's impossible to have a general algorithm to recommend relevant papers. To fix that, we now allow researchers to train different models based on the subject they are monitoring.

6. **Updates and clean-ups to code.**

We are making a way to implement new AI algorithms that will improve the accuracy of recommended articles.

Gregory MS

This last year most of our efforts have been put towards the generic version of Gregory AI, which doesn't mean that we overlooked the MS Project.

1. **Email Pains**

During 2024 we had a breach of security in the email service we were using. No personal information was compromised, but our account was used to send over a million spam emails.

We tried to work with our service provider to resolve the issue and present proof that our code was secure and all all credentials stored properly. Additionally, the email service we were using showed logins to our account from outside of Portugal, where we are based.

We weren't able to negotiate their waiver of the email fees and had to close that account and switch to using the [Postmark service](#). This also meant increasing the cost of hosting and sending emails for Gregory-MS by 15 USD per month. This means our monthly cost for hosting and email service is now 46,56 EUR (48,17 USD) instead of the previous average of 27,84 EUR per month (29.67 USD).

While this was sorted the email notifications were paused.

2. **Better algorithms to identify papers with positive patient outcomes**

We had the good fortune of having NOVA SBE use the MS Project as part of their Project-Based Learning program. They provided implementation instructions that can be found in the repository where we keep the code.
https://github.com/brunoamaral/gregory-ai/pull/436

We are falling behind with implementation because for now, Bruno Amaral is the only person coding new features and maintaining the software. This is a priority, of course, but with the current resources we can't estimate when it will be fully implemented.

3. **Towards brain regeneration**

REGENERAR is a Horizon Europe-funded project that brings together six partners from three European countries who will work together for four years to research the treatment of neurological disorders and promote brain repair.

We reached out to them to explain what Gregory-MS was doing, and they have spun out their own version for brain regeneration.

You can find their research at https://research.regenerar.eu/ .

Key Numbers for 2024

Data was collected on 2025-02-11 unless stated otherwise.

Gregory MS database

Articles	Relevant Articles[3]	Authors	Clinical Trials
29 376	1 208	167 753	5 271

Subscribers

Total Subscribers	Active Subscribers
165	130

Subscribers by profile

Patients	Doctors	Clinical Centres	Researchers
91	28	34	12

Website

Metric	Value	Change from the previous year
Views	11,916	▼ 4%
Visits	6,445	▲ 7%
Visitors	5,724	▲ 16%
Bounce Rate	70%	▼ 1%
Visit Duration	48s	▼ 43%

Social Media

Numbers retrieved on 2025-02-07

Social Media	Followers
Mastodon	118
BlueSky	486

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[3] https://api.gregory-ms.com/articles/relevant/

Software

Metric	Value
Software Releases	5
Commits to Code	426
Contributors to Code	2

Contributors:

- Bruno Amaral
- Manuel Tiago Pereira

Budget

Metric	Amount
Donations	€538
Expenses	$461

Report and Accounts for Gregory MS

Donations

Donation per Date
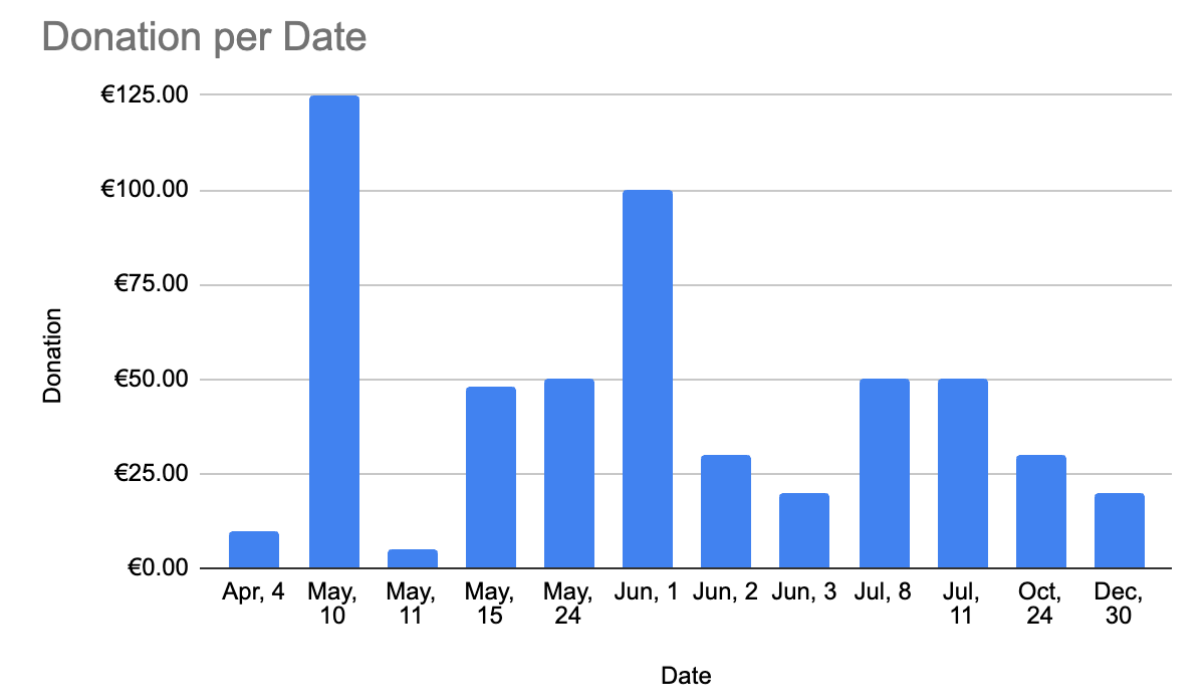
Who donated	Date and time of the donation	How much they donated in EUR
antoni*******@*******	2024-12-30 15:31:26	20
idale*******@*******	2024-10-24 15:24:17	30
helena.sha*******@*******	2024-07-11 08:42:25	50
lu*******@*******	2024-07-08 21:45:51	50
monik*******@*******	2024-06-03 11:48:48	20
mariat*******@*******	2024-06-02 13:16:01	30
pov.*******@*******	2024-06-01 16:52:40	100
pedro.*******@*******	2024-05-24 15:50:03	50
redtr*******@*******	2024-05-15 02:09:28	48

Who donated	Date and time of the donation	How much they donated in EUR
steveo*******@*******	2024-05-11 22:52:11	5
bandysi*******@*******	2024-05-10 15:27:00	25
wengl*******@*******	2024-05-10 15:14:52	50
wengl*******@*******	2024-05-10 15:14:07	50
ricardoc*******@*******	2024-04-04 21:35:08	10
Total		538

Expenses

Supplier	Description / Notes	Invoice Date	Month	Amount (USD)	Amount (EUR)
Cloudflare	Registrar Renewal Fee - gregory-ai.com	2024-12-28	12	10.44	10.09
Cloudflare	Registrar Renewal Fee - gregory-ms.com	2024-08-27	8	29.31	28.33
Cloudflare	Registrar fee for human-singularity.org	2023-10-26	10	20.22	19.54
Digital Ocean	Hosting	2024-01-01	1	28.80	27.84
Digital Ocean	Hosting	2024-02-01	2	28.80	27.84
Digital Ocean	Hosting	2024-03-01	3	28.80	27.84

Supplier	Description / Notes	Invoice Date	Month	Amount (USD)	Amount (EUR)
Digital Ocean	Hosting	2024-04-01	4	28.80	27.84
Digital Ocean	Hosting	2024-05-01	5	8.64	8.35
Digital Ocean	Hosting	2024-06-01	6	33.17	32.06
Digital Ocean	Hosting	2024-07-01	7	33.17	32.06
Digital Ocean	Hosting	2024-08-01	8	33.17	32.06
Digital Ocean	Hosting	2024-09-01	9	33.17	32.06
Digital Ocean	Hosting	2024-10-01	10	33.17	32.06
Digital Ocean	Hosting	2024-11-01	11	33.17	32.06
Digital Ocean	Hosting	2024-12-01	12	33.17	32.06
Postmark	Email Service	2025-01-13	1	15.00	14.50
Postmark	Email Service	2024-11-13	11	15.00	14.50
Postmark	Email Service	2024-12-13	12	15.00	14.50
Stripe	Transaction Fees	2025-01-01	1	-	0.63
Stripe	Transaction Fees	2024-07-01	7	-	3.72
Stripe	Transaction Fees	2024-08-01	8	-	2.90
Stripe	Transaction Fees	2024-06-01	6	-	5.11
Stripe	Transaction Fees	2024-11-01	11	-	0.82
Stripe	Transaction Fees	2024-05-01	5	-	0.40

Expense Category	Total in USD	Total in EUR
Domain name	59.97	57.96
Email	45.00	43.50
Fees	0.00	13.58
Website Hosting	356.03	344.13

Total

Fees (Stripe)
3.0%
Domain (Cloudflare)
12.6%

Email (Postmark)
9.5%

€57.96

€43.50

€344.12

Hosting (Digital Ocean)
74.9%
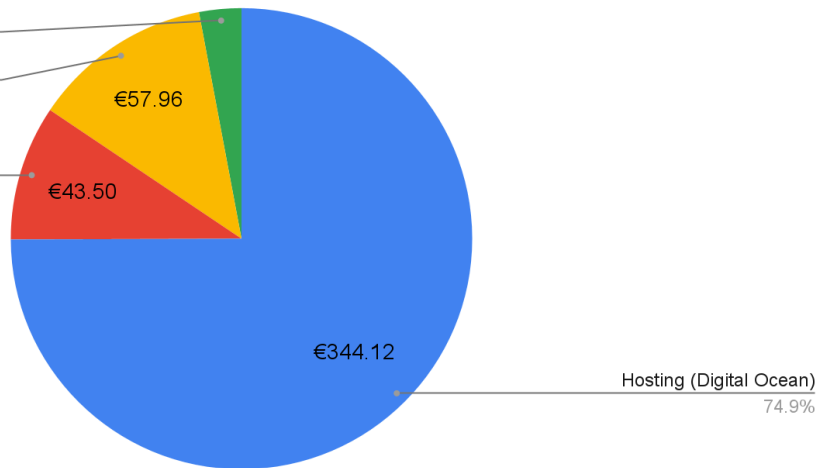
Next Steps for 2025

- Implement NOVA SBE algorithm.
- Increase community involvement.
- Expand collaborations with clinical research organizations.
- Improve security following the recent incident.

The Team

António Lopes

António is a programmer who has dedicated most of his professional life to researching, designing and developing systems in all kinds of environments, from desktop and mobile, to physical computing. He's been involved in researching and working with Artificial Intelligence since the year 2000, and in the past couple of years has focused his attention on AI usage and development.

After knowing Bruno for over a decade, they started working together on a way to automate Gregory and turn it into a tool anyone could use.

Find out more about what António has been working on at https://antoniolopes.info and on LinkedIn https://www.linkedin.com/in/alopes/.

Bruno Amaral

Bruno is a Digital Strategist who works to bridge the gap between tech and communication. He founded and works at the Lisbon Collective, and is a teacher, both in Lisbon University's Master's Course of Communication and Digital Strategy, and Public Relations at the School of Communication and Media Studies, also in Lisbon. Bruno was diagnosed with Multiple Sclerosis in 2019 and is using tech to help improve the quality of life for himself and others suffering from MS. You can see what Bruno has been working on at brunoamaral.eu and on LinkedIn https://www.linkedin.com/in/brunoamaral/

Micaela Gonçalves

Micaela is the newest addition to Gregory's team. As a structural engineer, she combines her technical career with a creative side, spending her free time playing the piano and painting with watercolours. Diagnosed with multiple sclerosis (MS) at the beginning of 2023, she faced the challenge with resilience, turning her personal experience into a source of motivation to make a meaningful contribution.

With a strong desire to make a difference, she decided to join the project after meeting Bruno, driven by the goal of improving knowledge-sharing among the various stakeholders in MS. Her aim is clear: to enhance the quality of life for people living with

multiple sclerosis, fostering more effective and collaborative communication.

Contact Information

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http://gregory-ms.com/

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Photo of António Lopes and Bruno Amaral by [Maria Abranches](https://maria-abranches.com/)[4].

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[4] https://maria-abranches.com/