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Project: Guideline

AI-Powered Business Name Recommender Tool

About the project:

An end-to-end, AI-powered business name recommender tailored for SME consultancy services. It blends curated domain expertise with data-driven NLP heuristics, optional LLM generation, and free domain-availability checks to produce short, brandable, professional names. The browser UI is elegant, animated, and easy to use; the backend is FastAPI-based and production-ready.

Link:
<http://localhost:8000/static/index.html>

AI Business Name Recommender

Generate brandable, professional names for SME consultancy services

Welcome to your naming copilot

Enter a few keywords and let the AI craft short, memorable, and professional names. Optionally, check domain availability too.

1. Type relevant keywords (e.g., growth, trust, advisory)
2. Pick how many ideas to generate and length bounds
3. Toggle domain checks and select TLDs if needed
4. Click Generate and shortlist your favorites

Keywords (comma-separated)

growth, trust, advisory, guardian, launch

Count

120

Top

15

Min Length

5

Max Length

12

TLDs

☒ .com ☐ .co ☐ .io

Optional dataset CSV (local path on server)

C:/data/business_names.csv

Choose file No file chosen

Upload CSV

☐ Check domain availability

☐ Use LLM boost (OpenAI)

Generate

Download CSV

Summary

- Generates 50–200+ high-quality, brandable names per run.
- Scores and filters for readability, professionalism, and relevance.
- Checks domain availability using free RDAP and DNS fallbacks (no keys required); optionally supports Domainr/GoDaddy keys.
- Accepts large real-world CSV datasets to bias name morphology.
- Optional LLM boost (OpenAI) to diversify candidates.
- One-click CSV export with rank, score, availability percent, and per-TLD labels.
- Clear, animated UI with “Created by Hammad Durrani” watermark.

Features

- Name generation strategies: compounds, blends, prefixes/suffixes, and alliteration.
- Smart scoring: length window, pronounceability, professionalism, and keyword relevance; duplicate suppression.
- Data biasing: mines frequent prefixes/suffixes from your datasets to reflect real-world naming styles.
- Domain checks:
- Free: RDAP (rdap.org) + Google DNS JSON resolver fallback.
- Optional: Domainr and GoDaddy API integration.
- LLM boost (optional): merges OpenAI suggestions with heuristic candidates and re-scores.

- Polished UI:
- Glow animations, welcome hero, concise “How to” guide.
- Dataset upload (CSV), toggles for domain checks and LLM.
- Responsive cards with per-TLD chips, availability percentage.
- Export visible results to CSV.

Structure and architecture

- Backend: FastAPI app
- Endpoints:
- GET /health
- POST /api/generate (or /generate): generate names
- POST /api/upload-dataset: upload CSV and return a server path

- Modules:
- `generator.py`: brandable name strategies
- `scorer.py`: composite scoring and duplicate filtering
- `domain_checker.py`: RDAP, DNS fallback; Domainr/GoDaddy if configured
- `preprocess.py`: curated lists, CSV ingestion (stream-friendly)
- `ml/morpheme_stats.py`: mine prefixes/suffixes from datasets
- `ml/embeddings.py`: optional TF-IDF ranking
- `ml/llm.py`: optional OpenAI generator
- `pipeline.py`: orchestration; merges sources; adds `availability_score`

- **Frontend: Static SPA**
- static/index.html, styles.css, app.js
- Controls: keywords, count, top, length bounds, TLDs, domain-check toggle, LLM toggle, dataset upload
- Results grid with score, availability, per-TLD chips, CSV download
- Packaging:
- pyproject.toml packages data and static assets
- README.md with usage and examples

**How this model can be trained using
NLP/ML**

- Current approach: lightweight, interpretable heuristics plus data mining:
- Mine morphemes (prefix/suffix fragments) from large CSVs of business names.
- Adjust generation priors to favor frequent, successful fragments.
- Score with readability and professionalism features; keep names short (default 5–12 chars).
- Extensible training options:
- Fine-tune or prompt LLMs with curated positive/negative examples, brand tone, and constraints.
- Learn a small classifier/regressor for “brandability” using features (length, vowel/consonant ratio, cluster penalties, morpheme stats, semantic similarity to keywords via embeddings).
- Use semantic embeddings for keyword-to-name relevance ranking of large candidate pools.

Advantages of this tool

- Produces professional, short, and on-brand names at scale.
- Works out-of-the-box with free domain checks (RDAP/DNS); no keys needed.
- Biases toward real-world naming patterns via dataset mining.
- Optional LLM boost adds creativity without sacrificing guardrails.
- Clean architecture, reproducible runs, and clear documentation.
- Elegant, client-facing UI suitable for demos and internal workflows.

How to use it

- Prerequisites:
- Python 3.10+
- Create venv and install:
- `pip install -r "AI-Powered Business Name Recommender Tool byHD/requirements.txt"`
- `pip install -e "AI-Powered Business Name Recommender Tool byHD"`

Run the web app:

1. `python -m name_recommender`
 2. Open `http://localhost:8000/static/index.html`
- Steps:
 - Enter keywords (e.g., growth, trust, advisory)
 - Choose Count and Top, set Min/Max length

- Toggle “Check domain availability” to use free RDAP/DNS checks
- Optional: toggle “Use LLM boost (OpenAI)” and set OPENAI_API_KEY
- Optional: Upload a CSV or paste a server path into “Optional dataset CSV”
- Click Generate
- Download CSV of the results
- Environment variables (optional):
 - OPENAI_API_KEY for LLM boost
 - DOMAINR_CLIENT_ID for Domainr API
 - GODADDY_API_KEY, GODADDY_API_SECRET for GoDaddy API
- CLI (batch, headless):
 - `python -m name_recommender.cli --keywords "growth, trust" --tlds .com .co --count 120 --top 15 --check-domains`

implemented to meet the task

- Data collection and preparation:
- Curated SME keyword list and seed names
- CSV ingestion for large real datasets; morpheme mining to bias generation

Model development (NLP/ML):

- Multi-strategy generator (compounds, blends, affixes, alliteration)
- Scoring: length, pronounceability, professionalism, relevance, and deduplication
- Optional LLM boost via OpenAI

Domain availability integration:

- Free RDAP and DNS fallback; optional Domainr/GoDaddy
- Availability percentage per suggestion + per-TLD labels

- Output & testing:
- 50–200+ suggestions per run; top 10–15 displayed
- CSV export with rank, score, availability percent, and per-TLD columns
- Clear UI/UX, animations, and watermark

Mapping:

- Data Engineer: dataset curation and CSV ingestion
- ML Engineer: generator, scorer, morpheme mining, optional LLM
- Software Engineer: FastAPI API, domain integrations, frontend
- Unique, relevant names; at least 2–3 with available domains and strong brand scores
- Reproducible workflow and documentation (README + this write-up)

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