



# Software Engineering

# R&D ML/AI projects:

## Neuroevolution, ANN (Go)

The GOLang implementation of NeuroEvolution of Augmented Topologies (NEAT) method to grow and teach Artificial Neural Networks without back propagation.

<https://github.com/yaricom/goNEAT>

[https://github.com/yaricom/goNEAT\\_NS](https://github.com/yaricom/goNEAT_NS)

[http://eplex.cs.ucf.edu/neat\\_software/](http://eplex.cs.ucf.edu/neat_software/)

## Deep ML (Python, R, TensorFlow)

Applying Deep Machine Learning for psycho-demographic profiling of Internet users using O.C.E.A.N. model of personality.

<https://github.com/NewGround-LLC/psistats>

<https://github.com/yaricom/TimeSeriesLearning>

## AutoEncoder NN, Classifiers (Python, Theano)

Its an attempt to create Brain Hash Algorithm able to find robust distinction between EEG signals of different humans

<https://github.com/yaricom/brainhash>

## Differentiable Plasticity with U-Net image segmentation (Python, Torch)

This study is aimed at determining what performance improvements can be obtained by applying differentiable plasticity rule added to the output layer of image segmentation ANN, which is based on convolution NN pyramid.

<https://github.com/yaricom/Plastic-UNet>

## NLP (Python, MXNet)

The experiment with applying NLP to correction of definite/indefinite articles in English text corpus.

<https://github.com/yaricom/english-article-correction>

## **NLU (Python, RASA NLU, Spacy NLP)**

This is simple chatbot application with Natural Language Understanding to maintain very simple shopping list.

<https://github.com/yaricom/chatbot-shopping-list>

## **Research Publications**

[https://hal.archives-ouvertes.fr/search/index/q/\\*/structId\\_i/487535/](https://hal.archives-ouvertes.fr/search/index/q/*/structId_i/487535/)

<https://arxiv.org/search/cs?searchtype=author&query=Omelianenko%2C+I>

<https://www.preprints.org/manuscript/201901.0282/v1>

# Industry Projects

## Online-banking multi-platform

Online-banking multi-platform is a groundbreaking banking application of well-known European bank.

App has a build in Digipass for Mobile -- a two-factor authentication device that allows simple yet secure management of your accounts in a very controlled way.

**iOS, Android**

## Customized e-Government and CRM solutions

The main client's product is Customized e-Government and CRM solutions, Rapid Application Development platform for customizable business solutions.

We are involved in supporting core of system, R&D process and development of new CRM modules and improving existing ones.

NewGround is involved in the creation and expanding the CRM, which is used in many government agencies in many countries, mostly European, and many large companies.

**.NET Framework, VS.NET, C#, XML, WCF, WPF, ASP.NET, SQL Server, TSQL**

## B2B CRM platform for financial market

Specialized Complete CRM for investment companies and personal use.

CRM covers activities for Investment Managers, Hedge Funds, Funds of Hedge Funds, Private Equity, Family Office, Pension Funds.

**.Net, C#, MS SQL, Dev Express, iOS**

## Unified decision-support software tools

The system is primarily developed for financial making-decision process. Tools are based on deep scientific researches in statistical and mathematical optimization models.

At the moment the application of tools has become wider in such areas as military and medicine.

**C, C++, Fortran, Mathematica, Matlab, SQL, PSG, API**

**GUI: VS2005, VS2010, Matlab, Mathematica, Office**

**Frameworks: API, MFC, STL, NAG, .NET Framework, WinSCP, PSG**

## Enterprise mobile solutions

We have developed number of applications supporting learning, technical servicing process for employees of conditioners and refrigerators producer as well as for end-customers experience.

One of them is feature-rich mobile application is based on the concept of smart home. Our product provides security, comfort and resource economy for users.

The app helps to monitor, adjust the settings, launch and switch off device at any time convenient to users.

**iOS, Android**

## B2B online entertainment platform

Real time high loaded interactive platform providing customized solutions for gaming business including real time video streaming, integrated tracking system, payments, integration into existing gaming business, customized applications.

**Java, Scala, Spring, Jax-rs, Jax-ws, Hazelcast, HTML5, JavaScript, Akka, Play frameworks.**

## GIS for Transit Authorities

Geo-information and Situational Awareness system for Transit Authorities that uses Real-Time Location, Emergency Alarm and Schedule performance information to apprise Dispatchers and Supervisors of the current Transit Operations Status. Manage Desk for movement control and administration.

**.Net 3.5, MS SQL, WPF, Java Script, Asp.net**

## Healthcare records system

Web based virtual inventory and compliance software.

Through a secure interface with the client's electronic medical record only eligible claims are captured ensuring program integrity and compliance. Retrospective and Point of Sale claims are captured through switch level data from the pharmacy billing software which guarantees 100% capture of all eligible claims.

**.NET Framework, VS.NET, C#, XML, WCF, WPF, ASP.NET, SQL Server, TSQL**

# Production-ready Kubernetes-based Infrastructure.

The Kubernetes development platform offers a comprehensive range of technical tools and technologies to optimize the development process. It includes solutions for web development, database management, caching, storage systems, application management, CI/CD pipelines, monitoring and observability tools, alerting mechanisms, single sign-on (SSO) capabilities, GitOps workflows, and GPU integration for accelerated machine learning/artificial intelligence workflows. These technologies provide developers with the necessary resources to efficiently build, deploy, and manage applications, ensuring scalability, security, observability, and increased productivity throughout the development lifecycle.

**Kubespray, kOps, Ingress, Istio, MySQL, PostgreSQL, Redis, Prometheus, Grafana, Loki, Alertmanager, Keycloak, RBAC, Gitlab, SonarQube, ArgoCD, Helm, Kafka, JupyterHub, Tensorflow, KServe, Coroot, eBPF, Linux.**

# Media/Interactive digital assets

## MagicPaint (BodyPaint)



Interactive visual tool permits users to draw on a virtual canvas, using the body as a brush. Audiovisual installation was introduced at the presentation on the request of Canon.

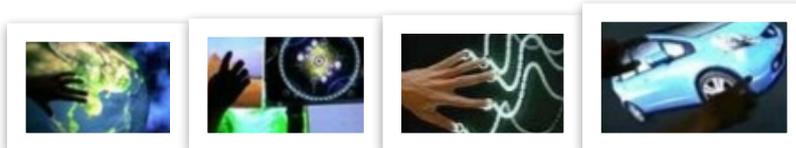
MagicPaint interprets movements, gestures and dance into a continuously evolving composition, thus expressing their feelings and emotions in all the richness of colors and genres – from bright fireworks

to the subtle brush strokes.



## Multi-touch surface

We present an interactive system with an accessible and fun user interface with rich functionality. The user interacts with digital content using simple gestures and touches. The system allows you to create solutions of any complexity.



We develop apps, games, maps, 3D models for Multi-touch surface.

<http://labs.newground.com.ua/>