50 years of Speech Recognition and Synthesis Laboratory (1964 - 2014)

Periods:

- Research Laboratory of Radio Receiving Equipment Department of Minsk Radioengineering Institute (1964 - 1974)

- Speech Communication Laboratory of Minsk Department of Central Communication Research Institute (1974 – 1988)

- Speech Synthesis and Recognition Laboratory of United Institute of Informatics Problems, National Academy of Sciences of Belarus
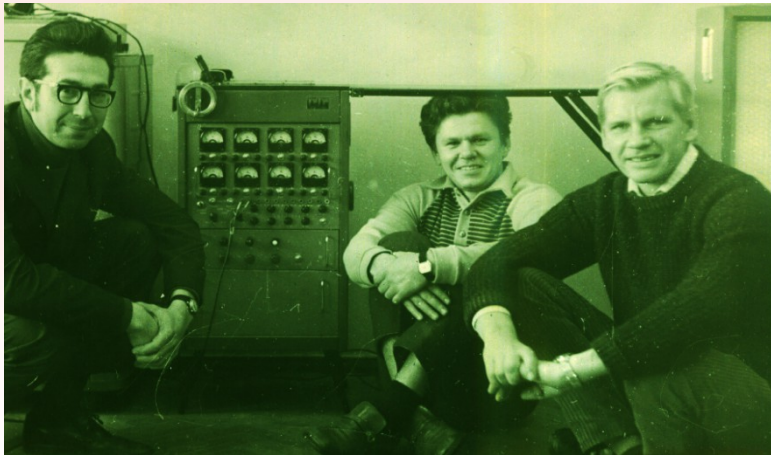
Research Laboratory of Radio Receiving Equipment Department of Minsk Radioengineering Institute (1964 - 1974)
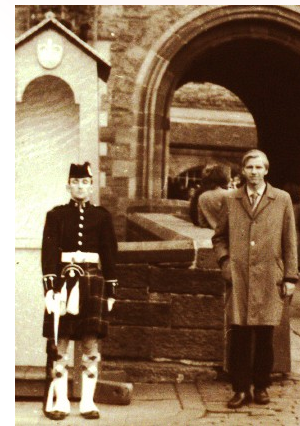

Analogue speech analyser

First generation of specialists in speech science:
M.Diehciarou, V. Ryzykau, M.Faciejeu and others.
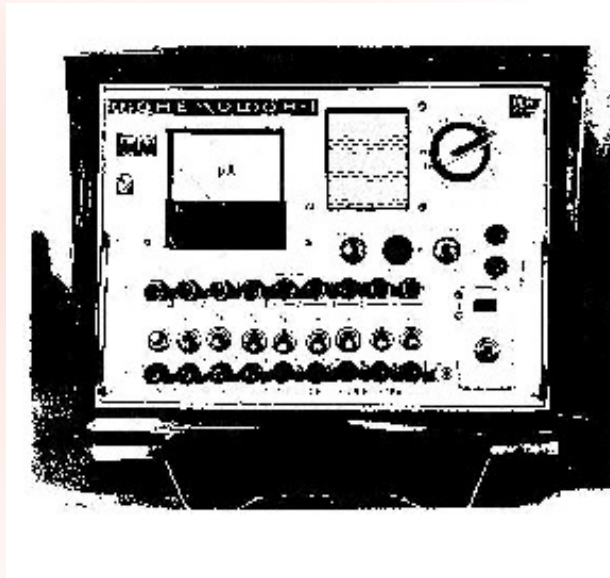

Analogue speech synthesizer

Internship in England (November 1969 - September 1970)

SPEECH SYNTHESIS IN MINSK Retrospective analysis of Speech Synthesis and Recognition Laboratory products

PhonemePhone-1 (1971)

- **Manual text input**

- **Autonomous device**

- **Phoneme-format method of synthesis**

PhonemePhone–2 (1975)

- **Autonomous machine**

- **Text input from punched tape**

- **Phoneme-format method**

- **Speech and singing synthesis**

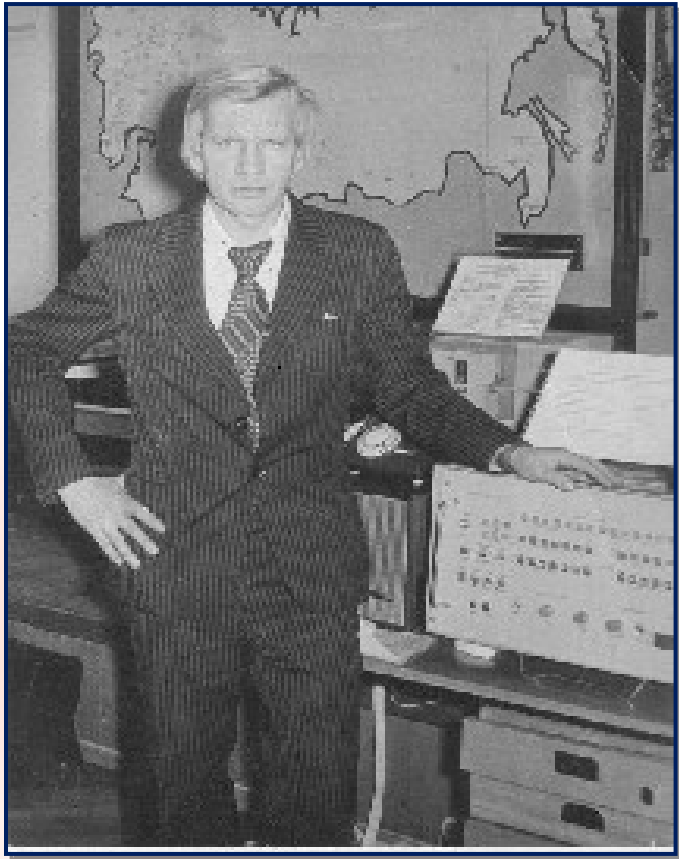*(The photo has not remained)*

Speech Communication Laboratory of Minsk Department of Central Communication Research Institute (1974 – 1986)

Second generation of specialists in speech science:
B.Pancanka, V.Shaciernik, L.Buchcilau and others.

"PhonemePhone–3"
Geneve, TELECOM - 1979

- Autonomous device
- Text input using computer or keyboard
- Telephone-line Connection
- Phoneme-articulation-format synthesis method
- Speech and singing synthesis
- Multilingual synthesis

PhonemePhone-3 was presented on TELECOM-1979 World Exhibition together with French, Italian, American and German speech synthesizers.
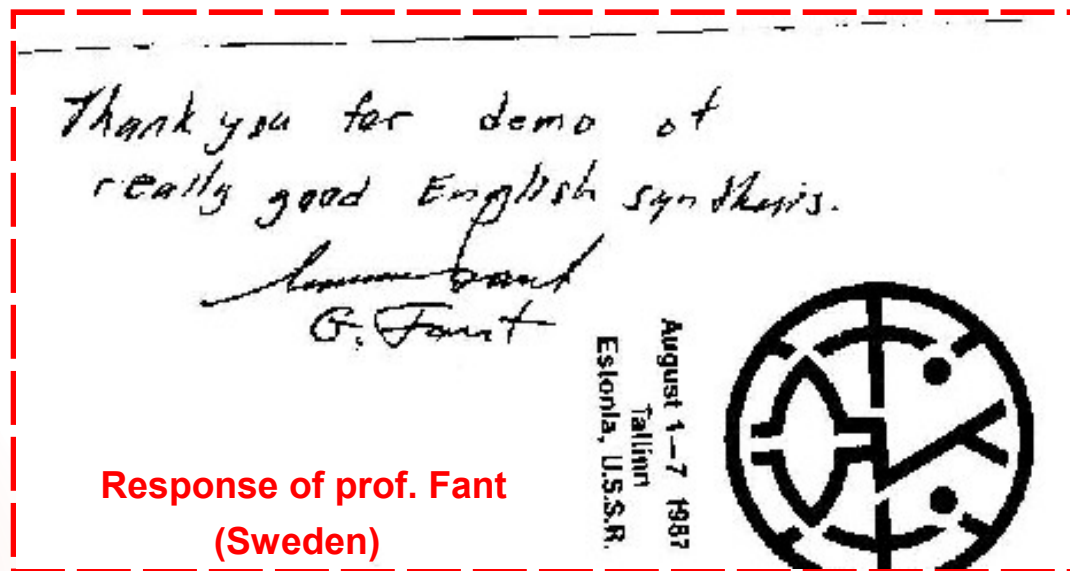
Speech terminal "МАРС - 1" - 1984

- Autonomous device

- Text input using computer or keyboard

- Phoneme-articulation-format synthesis method

- Dynamic programming method of recognition of speech commands

- First in USSR industrial device for speech recognition and synthesis was produced serially on «Кварц» factory in the city of Kaliningrad.

PhonemePhone-4 (1987)

- Text input using computer

- Autonomous device

- Phoneme-articulation-format synthesis method

- English and Russian text synthesis

- Two voices: male and female

- It was demonstrated on world congress of phonetic sciences - 1987

Thank you for demo of really good English synthesis.

O. Fant

August 1—7 1987
Tallinn
Estonia, U.S.S.R.

Response of prof. Fant

(Sweden)

(The photo hasn't remained)

Speech Synthesis and Recognition Laboratory of United Institute of Informatics Problems, National Academy of Sciences of Belarus (1986 – 2014 - …)

(1989 – 1999)

Second generation of specialists in speech science:
A.Ivanou, A.Kubasyn, A.Liaukouskaja and others.

(2000-2010)

Forth generation of specialists in speech science:
V. Kisialiou, A.Davydau, D.Zadziniec and others.

(2011-2014)
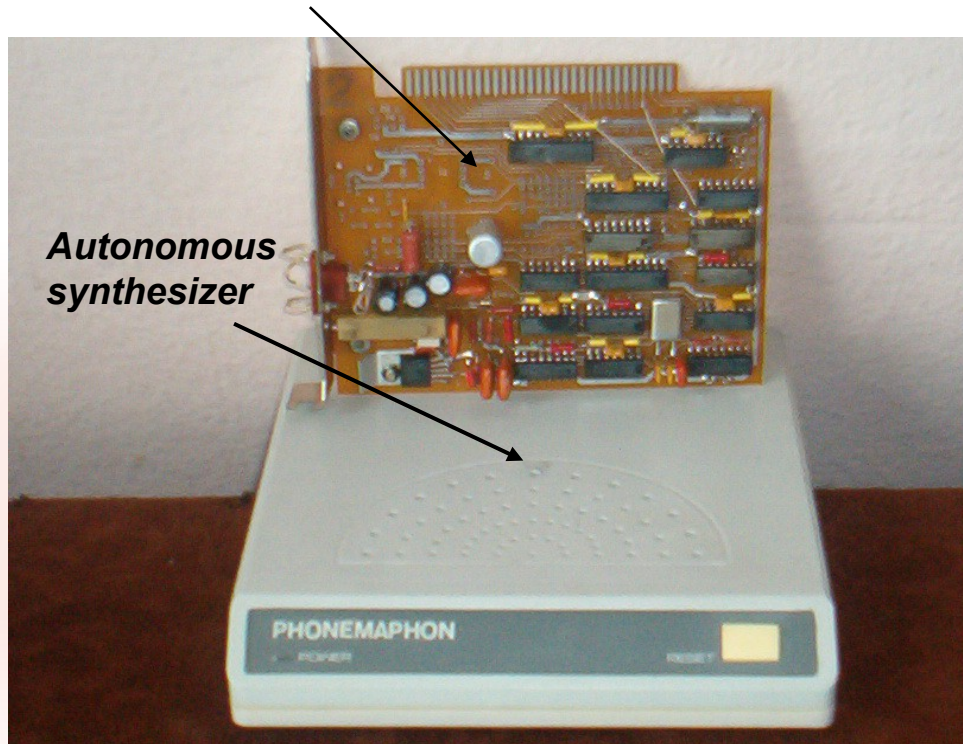

(2014 - …)

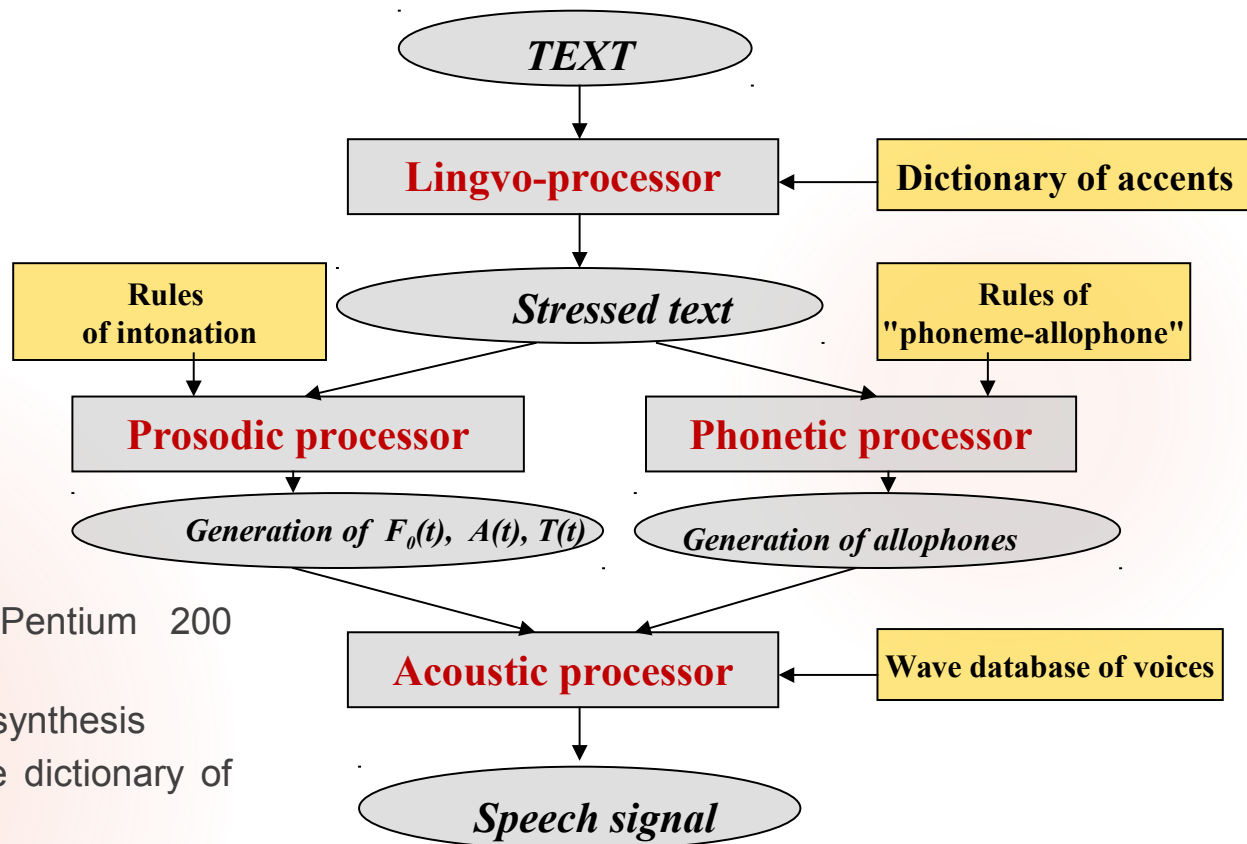Fifth generation of specialists in speech science

Microwave synthesizer - PhonemePhone-5 (1990)

Sound board for IBM PC-XT

Autonomous synthesizer

- **Autonomous device and software implementation for IBM PC-XT**

- **Phoneme-microwave method of synthesis**

- Working with a synthesizer it is enough to have IBM - a computer compatible with clock frequency not lower than 10 MHz and RAM not lower than 640 KB, operating system MS DOS 3.30 and one of the resident speech driver SDRV.

- Developers from Moscow State University used it in the software of "Speaking mouse".

Allophone-wave speech synthesizer PhonemePhone-2000

TEXT

Lingvo-processor ← **Dictionary of accents**

Rules of intonation

Stressed text

Rules of "phoneme-allophone"

Prosodic processor

Phonetic processor

Generation of $F_0(t)$, $A(t)$, $T(t)$

Generation of allophones

Acoustic processor ← **Wave database of voices**

Speech signal

Software implementation

- Windows-98, processor Intel Pentium 200 MHz, RAM 64 MB, HDD 500 MB
- Phoneme-microwave method of synthesis
- 450 thousand word forms in the dictionary of accents
- Wave database - more than 1000 allophones
- **It was used in creating personal "clones" for male and female voices.**

PhonemaPhone-2000

Examples of voice clones

Voice clones
Anatoly, Boris, Alesya and Viki

🔊 Anatolij T_Clone

🔊 Boris L._Clone

🔊 Alesya V._Clone

🔊 Vike O_Clone

🔊 А+Б+О+В_Clones

🔊 **Voice clone**
of the
"TV-travelers' Club"
anchor of Jury Siankievic

Clones of Boris L. (reading)

🔊 Who is there? (Siemion Altov)

🔊 Who is there? **(with the immitation of Belarusian accent)**

🔊 Example: the Belarusian language

🔊 Example: the Polish language

Clones of Boris L. (singing)

🔊 Марш высотников

🔊 Борька бабник

🔊 Польский гимн

New web-site of the lab
www.SSRLab.by

Speech synthesizer in the Internet
www.Corpus.by

www.Corpus.by

Here you can test online the latest prototype products of
the Speech Synthesis and Language Recognition Laboratory :

Text-to-speech synthesis

Service of searching and sorting of allophones
Сэрвіс пошуку і сартыроўкі алафонаў

Service of converting allophonic texts into different transcriptions
Сэрвіс канвертавання алафоннага тэксту ў розныя транскрыпцыі

Service of generating names of characters (encoding Windows-1251)
Сэрвіс генеравання назваў сімвалаў (кадыроўка Windows-1251)

Information on Characters
Інфармацыя аб сімвалах

Transcription Generator / Генератар транскрыпцый

Orthoepic Dictionary Generator
Генератар арфаэпічнага слоўніка

Spell-check for Belarusian U / Сэрвіс праверкі "у" і "ў"

Frequency of Words / Частотнасць слоў

Service of getting page by URL / Сэрвіс узяцця старонкі па спасылцы

Spell Checker / Праверка арфаграфіі

Get Publication References / Генератар спасылкі на публікацыю

Allophone Plotter / Графічнае адлюстраванне алафона

Allophonic Phrase Plotter / Графічнае адлюстраванне алафоннага радка

Get Listen File / Генератар файла для праслухоўвання

Sound Recorder / Запіс гука

RSS Reader / Чытанне RSS

Specialized Dictionary / Спецыялізаваны фанетычны слоўнік

Text-to-Speech PHP-Based Synthesizer

Please input a stressed text
Primary stressed vowel must be marked by '+' or ⁱ, a secondary stressed vowel – by '=' or ᵇ.
To mark two words as one phonetic word use 'Ъ'.

Example with '=', '+' and 'Ъ': *Паўно=чна-захо+дні вятры+ска садзьму+ўЪбы ўсё= лі+сце наЪвы+спе, алеЪпо+тым калі+сьці.*
Example with ⁱ, ⁱ and 'Ъ': *Паўно́чна-захо́дні вятры́ска садзьму́ўЪбы ўсё лі́сце наЪвы́спе, алеЪпо́тым калі́сьці.*

Ъ · · Clear! / Ачысціць!

```
Лі+кі..
адзі+н.
два+.
тры+.
чаты+ры.
пя+ць.
шэ+сць.
```

Belarusian (Беларуская мова) ▾ Generate Speech! ☐ Show log information

Software implementation for the Internet:

▯PHP 5.x

▯MySQL

▯Allophone-wave method of synthesis

▯**It's available for free; can be used for teaching students and for on-line testing of new algorithms**