

LLSTI

Local Languages Speech Technology Initiative

Coordination: Dr. Roger Tucker, Dr. Ksenia
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Report by:
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Objectives

- Vision:
 - Information access by voice
 - Computer accessibility for visually impaired
 - Local technological empowerment
- Mission – speech localisation:
 - Provision of open-source speech technology systems for commercially non-profitable languages.
- Initial emphasis
 - text-to-speech systems
 - currently based on Festival, Festvox, MultiSyn
 - other experimental work e.g. based on MBROLA

Languages

- Prototyped:
 - Hindi (HP Labs India)
 - isiZulu (CSIR South Africa)
 - Ibibio (University of Bielefeld, Germany, & University of Uyo, Nigeria)
 - Kiswahili (University of Nairobi)
- Work in progress:
 - Tamil (IISc Bangalore)
 - Nepali (Madan Puraskar Pustakalaya, Kathmandu)
 - Setswana (CSIR South Africa)

Coordinators

- Outside Echo Ltd., Chepstow, UK
 - Roger Tucker, Director
 - Ksenia Shalnova, Technocal Coordinator
- Contact:
 - <http://www.llsti.org/>

Partners

- Meraka Institute, Pretoria, South Africa
 - Etienne Barnard, Marelle Davel
- U Nairobi
 - Mucemi Gakuru
- U Bielefeld, Germany & U Uyo, Nigeria
 - Dafydd Gibbon, Eno-Abasi Urua
- CSTR Edinburgh
 - Rob Clark, Simon King
- HP Labs, India
 - K S R Anjaneyulu, Kalika Bali
- LT Research Centre, IIIT Hyderabad
 - Rajeev Sangal, M.S. Dipti
- IISc Bangalore
 - A G Ramakrishnan

Contributing institutions

- Partner universities and research institutes
 - U Edinburgh, UK
 - U Bielefeld, Germany
 - U Uyo, Akwa Ibom State, Nigeria
 - U Nairobi, Kenya
 - Meraka Institute, Pretoria, South Africa
 - HP, Hyderabad, India
 - IIIT, Hyderabad, India
 - IISc Bangalore, India

- External sponsors
 - Oneworld (Kiswahili)
 - IDRC Canada (isiZulu, Ibibio)
 - Department for International Development, UK

Results (1)

- Prototype demos of TTS systems for
 - Hindi
 - isiZulu
 - Kiswahili
 - Ibibio

Results (2)

- Production system in Kenya with LLSTI synthesiser:
 - Kenya's first large-scale voice information line to support rural farmers
 - supports banana growers at all stages:
 - from first deciding whether to grow bananas
 - through to
 - planting
 - maintenance
 - harvesting
 - pest control

Results (3)

- Tools:
 - INTSINT module for Festival (CSIR Pretoria)
 - Optimal Text Selection (HP Labs India)
 - Phonetically rich text selection (U Bielefeld, U Uyo)
 - FLAN Morphological Decomposition Shell (LRRC, IIT, India)
- Corpora:
 - texts and annotated corpora for the languages concerned

Results (4)

- Networking
 - seminars (incl. World Summit on the Information Society)
 - workshops (incl. SALT MIL)
 - conference presentations (incl. LREC)

Training – the key resource (1)

- Methodology for training and supporting linguists and engineers who don't have the complete skill set needed:
 - formal two week course for up to 15 participants. This can be also be used as a means of selecting project workers from a number of candidates.
 - more informal one week course for a smaller number of participants (max 5) who have already started work on the project, and focusing on particular needs.
 - on the job training using the web and phone, coupled with at least one face to face meeting.

Training – the key resource (2)

- As LLSTI scales up to include more partners, the training methodology will evolve:
 - remote courses
 - decentralised training
 - train trainers

Publications (1)

Pernilla Nasfors. Efficient Voice Information Services for Developing Countries, Master Thesis, Department of Information technology, Uppsala University, Sweden, 2007

Roger Tucker and Ksenia Shalnova. Supporting the Creation of TTS for Local Language Voice Information Systems, Interspeech, Lisbon, Portugal, 2005

Mucemi Gakuru, Frederick K Iraki, Roger Tucker, Ksenia Shalnova and Kamanda Ngugi. Development of a Kiswahili Text To Speech System , Interspeech, Lisbon, Portugal, 2005

Roger Tucker and Ksenia Shalnova. The Local Language Speech Technology Initiative - Localisation of TTS for Voice Access to Information, Crossing the Digital Divide shaping technologies to meet human needs, SCALLA Conference, Nepal, 2004

Publications (2)

Ksenia Shalanova and Roger Tucker. Issues in Porting TTS to Minority Languages, SALTMIL workshop on Minority Languages, LREC 2004, Lisbon.

Kalika Bali, Partha Pratim Talukdar, N. Sridhar Krishna and A.G.Ramakishnan. Tools for the Development of a Hindi Speech Synthesis System, 5th ISCA Speech Synthesis Workshop, Pittsburgh, June 2004

Mucemi Gakuru, Frederick K. Iraki, Roger Tucker, Ksenia Shalanova and Kamanda Ngugi. Design of Speech Data Base for Unit-Selection in Kiswahili TTS, E-Tech2004, Kenya

Marelle Davel and Etienne Barnard. The Efficient Generation of Pronunciation Dictionaries: Human Factors during Bootstrapping, ICSLP 2004, Korea

Marelle Davel and Etienne Barnard. The Efficient Generation of Pronunciation Dictionaries: Machine Learning Factors during Bootstrapping, ICSLP 2004, Korea

Reports

Etienne Barnard and Marelle Davel. LLSTI isiZulu TTS - Evaluation report.

Dafydd Gibbon, Eno-Abasi Urua and Moses Ekpenyong. Data Creation for Ibibio Speech Synthesis (scripts included).

Aby Louw. Flite Experience and Recommendations.

Aby Louw. A short Guide to Pitch-marking in the Festival Speech Synthesis System and Recommendations for Improvement.

Ksenia Shalnova. TTS Evaluation.

Ksenia Shalnova. Speaker Selection and Recordings.

Ksenia Shalnova. Phone Inventory and G2P rules.

Ksenia Shalnova and A.G. Ramakrishnan. TTS modules (general scheme).

Parthat Talukdar. Grapheme-to-phoneme conversion system.

Parthat Talukdar. Optimal Text Selection Module.

Outlook

- STARTI
 - discuss
 - LREC
 - EuroSpeech 2001 Aalborg
- FUTURE:
 - WANTED -
 - partners
 - links with other initiatives