

Radiology Report Generation with Automatic Statistical Phrase Completion

Quick Start Instructions

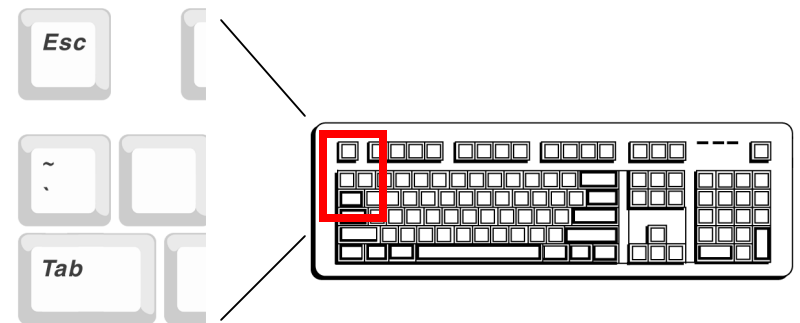
To start program:

- Double-click icon named “ForeWord” on the computer desktop.
- Start typing in report entry field. Predicted words will appear in yellow box.
- Special keys – TAB is most useful:

ESCAPE: delete word

BACKTICK: insert predicted words individually

TAB: insert entire predicted phrase



- Use sample reports (below) as a guide, since this program assumes a user-specific language model. (This demo uses the author’s model, but others can be loaded.)

Brief description: This program produces chest and general radiography reports by continuously predicting the highest probability word(s) after each keystroke is typed. The program’s prediction algorithm is based on a trigram language model derived from 37,000 radiography reports and is similar to algorithms found in speech recognition systems.

Report Entry Field – start typing your report here. Use TAB key to insert the program's predicted phrase. Use BACKTICK key to insert the predicted words individually.

Clear Report – erase current report and start over.

Info & Help – show user instructions and more technical details about the program.

Exit – please leave running for next person and do not exit.

Log Display – messages indicating the program's logic.

The screenshot shows the 'Radiology Report Generator' application window. At the top, there is a menu bar with four buttons: 'Clear Report' (with an eraser icon), 'Send Report' (with an envelope icon), 'Info & Help' (with an information icon), and 'Exit' (with a red X icon). To the right of these buttons is a 'Keystroke Count' field showing '42', and three smaller buttons: 'Add 1', 'Sub 1', and 'Clear'. Below the menu bar, the main window is split into two panes. The left pane is titled 'Enter Report:' and contains a text area with the following text: 'SMALL RIGHT SUBCLAVIAN VENOUS CATHETER WITH TIP IN SUPERIOR VENA CAVA APPEARING SINCE LAST EXAM FROM 12/1/01. NO OTHER CHANGE. INFILTRATE LEFT LOWER LOBE COMPATIBLE WITH PNEUMONIA UNCHANGED. MINIMAL A' followed by a highlighted prediction 'ARTERIOSCLEROSIS THORACIC AORTA'. The right pane is titled 'Internal Processing Log:' and has a 'Log Enabled' checkbox checked. It displays a multi-step search process. Step 1 shows a search with context '-end- MINIMAL A', identifying 'ARTERIOSCLEROSIS' as the most likely word. Step 2 shows a search with context '-end- MINIMAL ARTERIOSCLEROSIS', identifying 'THORACIC' as the most likely word. Step 3 shows a search with context 'MINIMAL ARTERIOSCLEROSIS THORACIC', identifying 'ARTERIOSCLEROSIS THORACIC AORTA' as the most likely phrase. Arrows from the text blocks above point to the corresponding buttons and panes in the screenshot.

Sample Reports: This program can be loaded with any user's language model. For demo purposes, the program assumes the author's model. Therefore, in this demo, typical performance will only be experienced for reports that are similar to the author's typical reports. Some samples are shown below for test purposes.

Chest Radiograph – sample report

SMALL RIGHT SUBCLAVIAN VENOUS CATHETER WITH TIP IN SUPERIOR VENA CAVA APPEARING SINCE LAST EXAM FROM 12/1/01. NO OTHER CHANGE. NO EVIDENCE OF PNEUMOTHORAX. INFILTRATE LEFT LOWER LOBE COMPATIBLE WITH PNEUMONIA UNCHANGED. MINIMAL ARTERIOSCLEROSIS THORACIC AORTA. NO OTHER ABNORMALITY.

Abdominal Radiograph – sample report

MODERATE DISTENSION SMALL BOWEL WITH MANY AIR-FLUID LEVELS. AIR AND FECES IN COLON. FINDINGS COMPATIBLE WITH ILEUS. MANY SURGICAL CLIPS IN PELVIS. NO EVIDENCE OF PNEUMOPERITONEUM.

Orthopedic Radiograph – sample report

ACUTE FRACTURE DISTAL FIBULA WITH 6 MM SUPEROLATERAL DISPLACEMENT OF DISTAL FRAGMENT. ACUTE FRACTURE MEDIAL MALLEOLUS WITH 4 MM INFERIOR DISPLACEMENT OF DISTAL FRAGMENT. MINIMAL WIDENING OF ANKLE MORTICE. NO OTHER ABNORMALITY. SUPERIMPOSED CAST OBSCURES DETAIL.

For more information:

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