

**AlphaSpell**

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## Chapter 1

# AlphaSpell

### 1.1 AlphaSpell 4.00 Copyright © 1995 Fergus Duniho

Introduction  
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### 1.2 Introduction to AlphaSpell

AlphaSpell is a fast, efficient spelling checker for text files. To spellcheck a file, it makes an alphabetized list of all the words in a file, compares it against any number of dictionaries, and prints out the words it doesn't find in any of the dictionaries.

AlphaSpell can use ordinary, one-word-to-a-line dictionaries, and it can use dictionaries in a special compressed format that it's capable of translating the more simple kind of dictionary into. In such a dictionary, each line begins with a root word, followed by various stems, which form words when concatenated to the root word. For example, a line might read:

```
cat aclysm astrophe erpillar s
```

This line represents the words cat, cataclysm, catastrophe, caterpillar, and cats. A compressed dictionary is better than a normal dictionary, because it takes less space, and AlphaSpell can read through it more quickly. In the future, AlphaSpell may use an even more compressed

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dictionary.

Besides spell checking, AlphaSpell can also create a list of all the words it does find. This is useful if you want to check for commonly misused words, or for words that commonly get misspelled as other words.

Besides compressing dictionaries, AlphaSpell can expand compressed dictionaries, merge uncompressed dictionaries together, and remove words from uncompressed dictionaries. In the future I plan to make it easier to maintain compressed dictionaries. For the present, you can use pipes or temporary files to get around AlphaSpell's limitations.

AlphaSpell can also check a single word against dictionaries, it can count the number of words in a file, and it can guess which word you want. This last feature is presently crude and primitive, but the GUI for XDME helps you work around its limitations. I expect to improve this feature in the future.

## 1.3 Usage

Spellchecking:

```
AlphaSpell S File Dictionaries ...
```

Finding words in dictionaries:

```
AlphaSpell F File Dictionaries ...
```

Merging two dictionaries:

```
AlphaSpell M Dictionary1 Dictionary2
```

Removing words from dictionary:

```
AlphaSpell R File Dictionary
```

Compressing Dictionary:

```
AlphaSpell C Dictionary
```

Expanding Dictionary:

```
AlphaSpell E Dictionary
```

Weeding words from a file:

```
AlphaSpell W File x y z
```

This will print all the words that appear at least x times and have at least y letters. If z is non-zero, it will recognize and count capitalized words. Otherwise, it will pass by capitalized words as though they are not in the file. This weeding feature is useful for culling words from text files.

Counting words in a file:

```
AlphaSpell N File
```

Testing whether a certain word in any of the dictionaries:

```
AlphaSpell T Word Dictionaries ...
```

Guessing which word you want:

```
AlphaSpell G Word Dictionaries ...
```

Whenever a file is taken in the argument immediately following the command, you may type "stdin" for the file name, lowercase only, to let AlphaSpell get input from standard input. This feature is useful for using AlphaSpell with pipes. For example:

```
cat *.txt | AlphaSpell stdin W 8 3 0
```

or

```
AlphaSpell E Dictionary | AlphaSpell M stdin user_dictionary |  
AlphaSpell >New C stdin
```

## 1.4 The AlphaSpell GUI's for XDME

Although AlphaSpell can be used on its own as a standalone program, I wrote it for use with the text editor XDME. As part of my XDME Excelsior Suite, I have written macros that automatize the use of AlphaSpell. When you want to spellcheck the document you're editing, select "Check Spelling" from the "Spelling" submenu of the "Misc" menu. AlphaSpell will then spellcheck the file, and XDME will load AlphaSpell's output into a listview gadget. This listview gadget belongs to a GadToolsBox GUI, which contains another listview and some buttons.

The first listview contains an alphabetized list of the words AlphaSpell didn't find. You can quickly review the list to find the words you know are misspelled. You can then use the "Prev" and "Next" gadgets to find each occurrence of the words you've misspelled. Just click on the word, so that it appears in the bottom of the listview, then press on "Prev" to search backwards or on "Next" to search forwards. It is best to go to the top of the document before beginning any new search. You can do this as you normally would, since the requester is asynchronous. Unlike XDME's ordinary prev and next commands, the "Prev" and "Next" gadgets search for whole words. So if you're searching for a small word, it won't stop every time it is part of a larger word.

If you know that a word in the first listview is spelled correctly, you can indicate that you want to put it in a user dictionary by clicking the "Learn" button. This will move the word from the first listview to the other one. If you make a mistake or change your mind, you can put a word back into the first listview by clicking on the "Remove" button. You can move the words from the second listview to your user dictionary by clicking on the "Save" button. Once you do this, these words will belong to your user dictionary, and they will disappear from the listview.

If you aren't sure how a word should be spelled, you can ask AlphaSpell to guess the correct spelling for the word you want by clicking on the "Guess" button. It will then pop up another GTB requester with its guesses in a listview. If you don't find what you're looking for, you can change the spelling in the string gadget and have it guess again by clicking on the "Guess" button in the new requester. You can keep doing this until you're happy with the results. Once you find the word you want, you can click on that word and then use the "Replace" button to delete the current word and put the new word in its place.

## 1.5 History

AlphaSpell has its roots in a spelling checker I wrote in ARexx back in Fall 1991 or Spring 1992. I learned C in the Spring of 1992 and rewrote that spelling checker in C for my first major project in C. Initially, it was mainly a brute force spelling checker. Its main virtue was that it finished spellchecking quickly, because it spellchecked words in alphabetical order, thereby requiring only one pass through the dictionary.

AlphaSpell V2.00 was also in C, but I never released it. It had the ability to use a compacted dictionary.

AlphaSpell V3.00 was a new C++ program. It implemented the same basic algorithm as V2.00, but with less redundancy. This version also did the tasks that previous versions depended on other programs to do. Previous versions required other programs to get the words from a file, to sort those words, and to remove redundancies, in order to create an alphabetized list that AlphaSpell could read. AlphaSpell V3.00 did all this on its own.

AlphaSpell 4.00 is in C again, because C++ has changed, and some of my old C++ code is broken. Unfortunately, I don't have references on the latest revision of the language. So I translated it all back into C and added a bunch of new features. New features include word counting, guessing, testing, weeding, and the ability to work with multiple dictionaries, both compressed and uncompressed. Previous versions expected input from standard input. Version 4.00 does not unless you tell it to by using "stdin" as a file name.

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```
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```

```
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(at your option) any later version.
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```

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```

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```
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under certain conditions; type `show c` for details.
```

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```
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```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
```

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## 1.7 Details

### WORDS

A word for AlphaSpell is a string of two or more letters, which may have apostrophes inside but not at the ends. Words do not include apostrophe-s.

#### LEGAL WORDS

```
ain't
by
Amiga
twas
```

#### ILLEGAL WORDS

```
a
'twas
Amiga's
```

### SPELLCHECKING METHOD

AlphaSpell spellchecks words in alphabetical order, hence its name. As it begins to look for each word, it begins where it left off in the dictionary. This allows it to quickly finish spellchecking by making only a single pass through the dictionary. It can thereby

finish spellchecking in less time than it would take to load the dictionary into memory.

## 1.8 About the Author

I am Fergus Duniho. I am a Ph.D. candidate in the Philosophy department at the University of Rochester. I have finished everything but my dissertation, which will be on evil as a psychological attribute. More specifically, it's on whether we can rightly describe some people as evil, and on what it would mean to say that someone is evil.

I am also the author of the DDLI, a computerized personality indicator. Get ddli341.lha from the aminet and try it out.

My email address is: [fdnh@troi.cc.rochester.edu](mailto:fdnh@troi.cc.rochester.edu)

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